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THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 40 OCTOBER, 1936 No. 1

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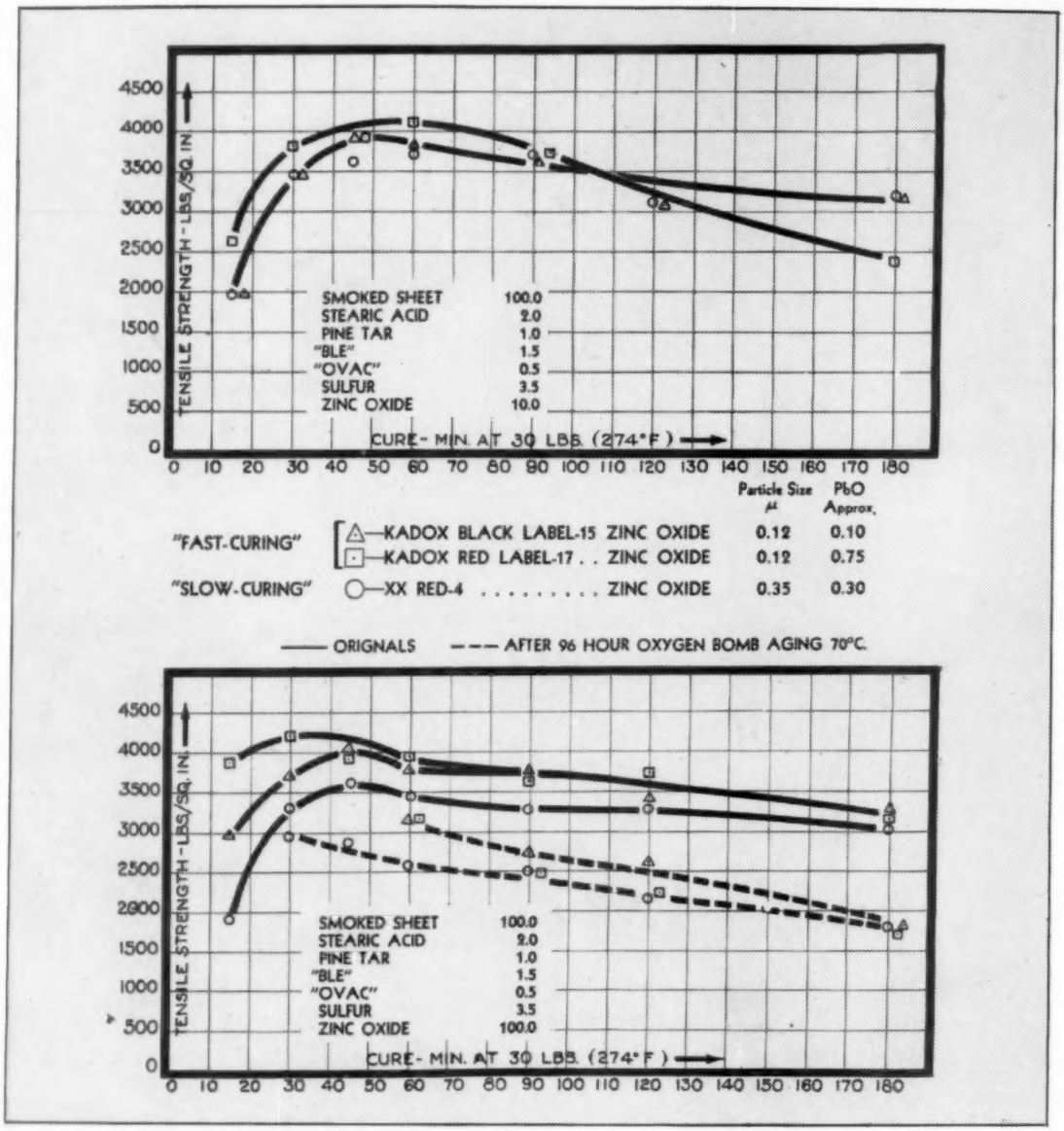
"FAST-" and "SLOW-CURING" ZINC OXIDES with "OVAC" and "BLE"

No. 51

of a series of charts showing a comparison of "FAST-" and "SLOW-CURING" zinc oxides with typical accelerators.



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THE NEW JERSEY ZINC COMPANY

The Rubber Age

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Modern Microscopes in the Rubber Industry

A Description of Modern Micro-Cameras, of the European type, with Improved Methods of Illumination and Their Growing Importance in Testing Rubber, Compounding Materials and Fabrics.

By Dr. Alfred Salmony

IN THE rubber industry, as in many other industrial fields, various methods of physical analysis have gained a firm footing on account of their reliability and the rapidity with which they can be carried out. This pertains particularly to the rubber industry because crude rubber is subject to considerable fluctuation. It is now generally known that the fluctuating quality of crude rubber, which is accentuated by the influence of microbes, was an inducement to the development of the processes for producing synthetic rubber *(1)*.

For some time the microscope has been employed in the rubber industry for testing material in the laboratory. Its suitability for a large number of tests is due in no small measure to the fact that it enables the use of several methods of illumination and produces excellent micro-photographs. The taking of micro-photographs formerly required much time and skill; the usual arrangement of a vertical camera which was connected to the top of the microscope by means of a tripod had to give way to the so-called optical bench which combined lighting source, microscope and camera. The optical bench had several drawbacks: it required large space; was sensitive to jolts, any slight motion being sufficient to distort the micro-photographs; and took up too much time for the transition from visual observation to the taking of the micro-photograph and from one kind of illumination to another.

All of these drawbacks have been eliminated in the last few years by development of the so-termed micro-cameras, combinations of efficient microscopes with cameras built firmly into them. During the development of these new instruments improved methods of illumination were also introduced and adopted.

As rubber technologists well know, laboratory tests are manifold and apply not only to crude rubber but also to a large number of compounding materials, such as fillers, vulcanizing agents (sulfur, selenium), accelerators, age and fatigue resisters (phenylalpha- and phenylbeta-naphthylamine, adolalpha-naphthylamine), as well as cord fabrics and other materials in the case

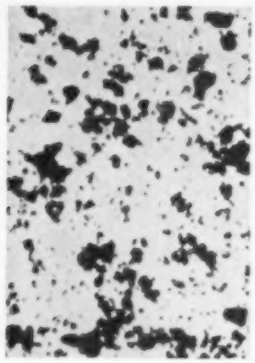


FIG. 1

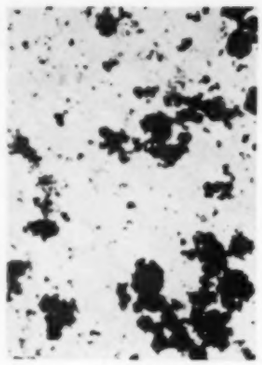


FIG. 2

Photo-micrographs of Gas Black (Fig. 1) and Lamp Black (Fig. 2) X24.

of tires. A few examples should suffice to explain the efficiency and value of present-day microscopic technique as applied to the rubber industry.

Carbon black has long been recognized and acknowledged as the best pigment for abrasion resistance and tensile strength in tire treads, far more so than any of the other blacks. A sample of American carbon black as seen through the microscope is shown in Fig. 1. This was taken with a 36 times magnification in transmitted light (bright-field) by pre-sliding a green filter with a Perutz-Braunsiegel plate, exposure amounting to two seconds. Fig. 2, on the other hand, shows ordinary lamp black photographed in the same manner. A comparison of both micro-photographs instantly reveals that the lamp black is an agglomeration of the smallest particles which must of necessity bring about a less adequate mixture with rubber.

A typical example of the damage caused in a tire by neglecting air pressure is shown in Fig 3. As may be seen, the damage to the cord is limited in extent, apparently caused by certain areas offering less resistance to abrasion than the stress requires. The testing of new fabrics to ascertain their uniform tensile strength and abrasion resistance is being successfully accomplished by means of the so-termed combined reflected and transmitted light illumination. The effect of using this method is that the transmitted light brightens the background of the object being photographed, clearly setting off its outlines, and the reflected light (or oblique reflected light) is able to increase the plastic effect of the finished photograph. This effect is more clearly shown in a fabric that is not as tight as cord, such as the loose cotton fabric seen in Figs. 4a, 4b and 4c, which represent the same fabric magnified 26 times in reflected light, transmitted light and in the Hauser illumination method, respectively.

The oblique reflected light method, accomplished by means of an oblique illuminator which is readily fitted to the micro-camera, and which makes it possible to obtain characteristic micro-photographs rich in contrast due to the concentrated unilateral penetration of light, is also adaptable in a number of cases to the analysis of fabrics and to ascertaining signs of abrasion and lack of tensile, through friction, which produce surface structures in a definite direction.

To determine whether rubber products have been attacked by microbes, possibly through warehousing in damp locations, the "Schlieren Method" after Toepler can be utilized. This method uses light refractions and is particularly suitable for illustrating plate cultures. The name "Schlieren Method" originates from the fact that owing to refraction exposure differences, diffusion processes can be made visible, as for instance the dissolution of crystals of chemical compounds and the haphazard diffusing of mediums of solution which cannot be made visible by any other methods of illumination except that employed by this method. The illustration comes into being in a purely geometric optical manner, and photos are obtained which bear a resemblance to dark field-pictures.

FIG. 3—Example of tire damage due to neglect of air pressure.

FIG. 4a

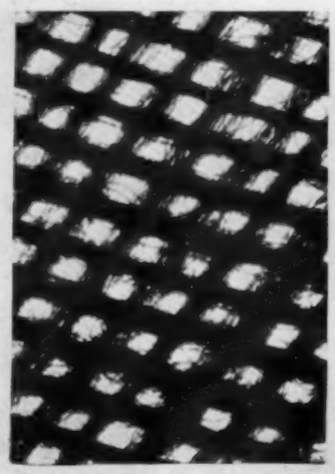


FIG. 4b

FIG. 4c

A cross-section of cotton fabric magnified 26 times in reflected light, transmitted light and in the Hauser illumination, respectively.

The Toepler method can be applied practically with one of the latest perfected micro-cameras, i.e., the Metaphot, by reflecting the commutator diaphragm of the lamp housing in the object glass. After this reflection is obtained, a central diaphragm cut from black paper is inserted within the commutator diaphragm, the diameter of the central diaphragm being of such proportion that the diaphragm picture in the object-glass is somewhat smaller than the free aperture of the latter. The most favorable conditions for photographing can be obtained through proper adjustment of the object-glass diaphragm.

The Metaphot, shown in Fig. 5, is a development of the Emil Busch A.-G., of Rathenow, Germany. This instrument has several advantages over similar types of micro-cameras in that it permits observing and photographing at the same time. The camera, fitted for the usual plate sizes, i.e., 6.5 x 9, 9 x 12 and 13 x 18 inches, is built into the base of the instrument, while all accessory equipment near the camera itself has been relegated to other positions so that it does not interfere with the freedom of movement of the operator's hands. This method of construction has also been adopted by Reichert, of Vienna, in their "MeF" Universal micro-camera. It calls for a special application and does not follow the conventional form of microscopy.

Use of the Metaphot, or other instruments of this type, requires placing of the specimen underneath the object table, the microscope really being in an upside-down position. The object rotator was replaced by a device for fixing the object in a diagonal sliding-carriage which enables an unlimited number of objects to be inserted after the other, each being immediately fixed in an exact center position.

Transmitted light illumination is accomplished in the Metaphot in the following manner: the lamp housing, a swivel mirror built firmly into a metal casing for the illuminating cone of light, and a large illumination apparatus on the Abbe style are all assembled on a carrier which can be affixed to the top of the instrument by means of a long dove-tail guide and just as readily removed. Between the lamp housing, which is provided with an asphaeric condenser, and the swivel mirror, there is ample space to insert a cooling trough and at least two light filters of 60 x 60 mm.

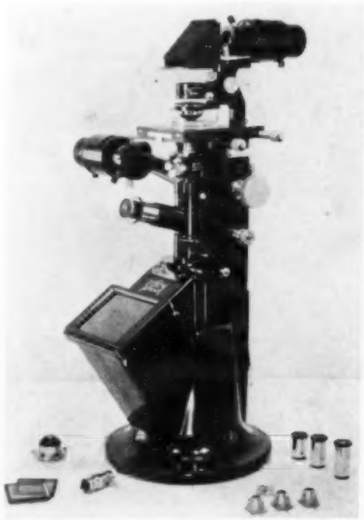


FIG. 5—The Metaphot.

FIG. 6—The Metaphot arranged for polarized transmitted light.

size. There are six types of filters, viz: red, blue, orange, yellow, yellow-green and blue-green, these six sufficing for all types of dyed microscopic slides.

For examinations in reflected light, the lamp housing is attached to a lateral protecting arm on a level with the vertical illuminator and then to the objective. Either the usual bright-field vertical illuminator or a new bright-field—dark-field illuminator with prism, planoplate and dark-field reflector, the Univertor, is used in this connection. The Koehler illumination arrangement is accomplished by this machine by use of a specially constructed condensor nozzle which may be adapted to both illuminator types.

At the present stage of development, illumination is generally provided by means of 30-watt or 50-watt lamps. In the case of the 50-watt lamp, two filaments are so inserted and arranged in the bulb itself that one filament is placed directly behind the other so that they lie in the optical axis of the illuminating light cone. In cases where objects with a number of delicate details must be reproduced with a high degree of magnification, a lamp of higher voltage is needed.

A small arc lamp of 4.5 or 5 amperes can be used in connection with the micro-camera, both the camera and the lamp being mounted on the same base. For examinations in fluorescent light, the arc lamp may be replaced with either a mercury vapor lamp of special shape or by an arc lamp with electrodes which gives

FIG. 7—The Citophot with camera mounted.

out a light rich in ultra violet rays similar to the iron electrodes mentioned in several of the Reichert-Haitinger patents.

It is frequently necessary to work with polarized reflected or transmitted light to enable the detection of vitiations in latex or rubber solutions. An arrangement for polarized transmitted light is illustrated in Fig. 6. This arrangement represents an inset graduated to 360° which easily rotates in a cone ring and has detachable preparation clips, resulting in a simplified polarization table. The large cross-shaped table which is used in this instance must be exceptionally strong and spacious—approximately 12 x 12 cm.—which enables the examination of large size objects.

The polarization illuminating apparatus contains a condenser, a diaphragm, a detachable gypsum disk and a polarizator large enough to utilize to its full extent the numerical aperture of 1.2. An intermediate piece with an analyzer rotating at 90° over a dial divided from one to five degrees that can readily be switched on and off is fitted on top of the microscope tube. The equipment for polarized reflected light is arranged in a similar manner and is just as simple to operate.

A somewhat peculiar micro- and macro-scopic camera—the Citophot—was exhibited for the first time at the 1936 Leipzig Spring Fair *(2)*. The purpose of this special camera is to enable owners of high-grade microscopes of older construction, that is, those where the ocular tube is arranged in a vertical position on top of the instrument, to utilize these microscopes for taking good micro-photographs, saving them the expense of purchasing the more up-to-date micro-cameras. Fig. 7 shows this Citophot used in connection with a microscope.

The horizontally arranged camera with bellows leaf for a 9 x 12 cm. size is supported by a hollow carrier joined by casting to the base. On the reverse side of the carrier two nozzles are arranged a sufficient distance from the base so that when the lamp housing is inserted into the lower nozzle, transmitted light illumination is achieved, and when inserted into the upper

FIG. 8—Workshop equalization microscope which operates within a 30 to 50 to 70 magnification range.

nozzle reflected light illumination is accomplished. The Hauser illumination can be achieved with the aid of two lamps.

The picture is sharply focused on the ground plate which is turned in the direction of the observer; the

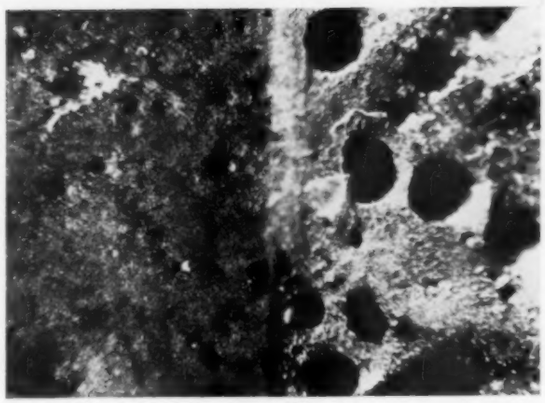


FIG. 9—Micro-photograph showing comparison between a good seam and a poor seam taken with a workshop microscope.

ground plate is then interchanged for a clear glass plate on which the minutest adjustment is made by means of a magnifying glass. The picture is then automatically reproduced on the photographic plate with equal sharpness and in the same size as well as with the correct margin. A slight turning of a lever, set on the right-hand side of the Citophot, switches off the mirror reflex equipment whereupon exposure is made by operating the release (time and instantaneous) and the shutter which is built into the front of the camera.

Even the finest type of micro-camera apparatus would be of little value unless suitable photographic material, with the particular developing solution best suited to the job, is used. For photographing objects with delicate structures, such as those found in transverse sections of crude rubber or in cord fabrics, less sensitive but fine-grained plates should be used, that is, photo-mechanic or diapositive plates. Use of diapositive plates makes it possible to produce strong positive enlargements when desired.

If micro-photographs of colored objects, such as rubber goods dyed in antiammoniated sulfide of mercury and vulcanized with auric sulfur, or rubber goods colored by some other method, are desired, it is advisable to use orthochromatic plates of medium sensitiveness by pre-sliding a light-filter. Only with instantaneous photographs of changeable objects (as for instance when observing the coagulation of latex under various conditions) should highly sensitive plates be used. The developing solutions prescribed by the photographic plate manufacturers, the combination of which has been thoroughly tested and re-tested, should never be replaced by other solutions, such as the much used metol-hydro-quinone solutions.

Recently a work shop equalization microscope which operates within a range of 30 to 50 to 70 magnification has been perfected. The purpose of this instrument is to rapidly secure work shop comparisons of materials at any stage of manufacture with a standard sample believed to be beyond criticism. An exterior view of this instrument which is particularly constructed to stand rough treatment is seen in Fig. 8. It not only permits rapid examination of both raw materials and finished products but may also be used for the control of apparatus such as pipes, vulcanization autoclaves, etc. In order that large objects which cannot be accommodated on the object table can be handled, the tripod base of this instrument is detachable. The pictures of the specimen to be examined

(Continued on page 30)

The automatically timed and operated unit or "watch-case" vulcanizers open their jaws to disgorge the finished tire. They cannot close until the operator manipulates a control lever. A long, stout bar gives the operator enough leverage to remove the tire without back strain.

Every Man A Safety Man

By C. F. Scheer

SAFETY cannot be superimposed on an industrial plant like a "gadget" on a mechanical contraption. If it is to fulfill its purpose, it must be made a part of the plant and of the men and women who work in it. The realization of this fact is apparent at the Detroit plant of U. S. Rubber Products, Inc., where every effort has been exerted to make every man a safety man.

In the creation of the plant safety program emphasis has been placed on attitude and atmosphere. But to develop this safety mindedness it has been necessary to centralize the program and to reach every one of the 4,000 to 5,000 employes as an individual. For each employee must be familiar with the safety plan and the reasons for it, if it is to succeed.

At the U. S. Rubber Products there is a formally constituted safety organization and a safety supervisor, but actually every employee in the plant and office, from the general manager to the janitor, is a safety worker who cooperates with the safety supervisor in attacking accidents before they occur.

The tire division of the Detroit plant offers an excellent picture of how this operates. The molding and shaping of the safety program might readily be compared to the molding of a tire. an operation in which many units are skillfully combined, then fused to form the finished product.

The building of the tires begins with the creation of the fabric—a continuous sheet formed of tough cord bound together with latex. Simultaneously, in another section of the factory, blocks of crude rubber are being treated and formed into strips that later will become side-walls, binder, or tread. On the tire building machines the fabric and rubber are brought together in alternate layers by skillful workmen, and the beading, which is built around a wire core, is fastened in place. At this stage the tire is known as a carcass and looks like nothing so much as a small keg with the ends knocked out.

At the shaping machines the sides of the carcass are turned in and the tire takes recognizable shape, but it must yet go to the vulcanizer. There, in the confines of a mold and under terrific heat and pressure, it is given a tread design, and the component parts are fused into one. Both the unit or "watch case" vulcanizers, which cure one tire at a time, and the huge pit vulcanizers, which accommodate 32 tires, are used. The cured tires, after inspection and wrapping, are ready for shipment.

While the process of making tires does not involve the use of drill-presses and similar machines, there are, nevertheless, many opportunities for serious hazards —whirling fly wheels, conveyors, belts and power shafts, calenders, grinders and mixers, electric trucks, emery wheels, monorail hoists, hand tools, piles of stock—and in some departments combustible fumes. One recognizes the presence of the last hazard as soon as he steps through any entrance and sees the signs reading, "Danger—No Smoking in This Plant." Outside of entrances within the plant grounds are large containers bearing the words, "Leave your cigarettes, matches and stubs here."

Within the plant extreme care is taken in the choice of equipment. When a machine is being designed, plans and specifications must be studied and approved by the plant safety supervisor, who is an engineer. The results of this plan are everywhere in evidence. The warmers and calenders are equipped with a safety

This article is reproduced from the October, 1936, issue of the *National Safety News*.

trip, so that the machinery will stop before a worker can be drawn into the rollers if he should slip or perform his operation incorrectly.

Belts and motors and fly wheels are shielded either with screen or sheet metal guards. Where fumes are generated, hoods carry them off. Glass guards enable a worker to operate an emery wheel, see what he is doing, yet not expose his eyes to injury.

Screens are placed about the revolving wire brushes that clean out the molds so that passers-by cannot be injured by flying particles. Aisles are roofed over where conveyors pass, so that material will not drop to the floor. Counter-weights descend into tubes, so that a toe will not be in their path when they drop.

On the monorail hoists which raise and lower the ponderous covers of the pit vulcanizers, a U-bolt is fastened across the mouth of the hook that holds the chain, making it impossible for the chain to slip off. Automatic steps are provided on conveyors as a safeguard in case a link breaks. Hand trucks are designed so that the worker moving them may see through and beyond them. In one section of the plant, where electric trucks operate and where two aisles come together at a blind corner, a mirror shows the operators whether traffic is approaching.

The entire plant is equipped with sprinklers. Machines bear the warning, "Danger. Positively do not attempt to make adjustments on this machine. Call a mechanic."

Inspection of the plant will reveal that housekeeping is recognized as a concomitant of safe physical equipment. Traffic aisles are clear. The plant is well lighted, both with windows and with artificial illumination. Wash rooms are scrubbed down twice daily. The ceilings, and also the walls and pillars to within five feet of the floor, are painted white or aluminum. Corners and the wall space around the drinking fountains are made conspicuous with white or yellow paint.

Factory Safety Council

In an atmosphere such as this the employes cannot help feeling that the management wants a safe, clean plant. Any misunderstanding on this point would readily be cleared up by the widespread safety organization. At the source of the safety activity is the factory council, composed of 32 elected employee representatives and 32 supervisors appointed by the management. Strictly speaking, this committee has been organized to handle mutual industrial relations matters. Actually it devotes a part of every meeting to safety, for it is recognized that this group—representing not one department but the entire plant—has a broad picture of the safety problem and thus can give valuable assistance in planning a general safety program. It can realize, also, that safety on the street and in the home is a part of efficient production.

Before this group the management places its safety statistics. Man-hours, severity and frequency ratings are explained in lucid terms. Accidents are represented as an economic loss not only to the victim, but to every employee in the plant. For, by eliminating accidents, production costs can be minimized. Thus more units of the product can be sold, and steady employment is assured. Many valuable safety suggestions have emanated from the meetings of this committee.

In addition to this group there are departmental safety committees which cooperate with R. S. Farnum, plant safety supervisor and M. A. Clark, manager of industrial relations. Since every foreman is held strictly responsible for production in his department, as though it were his own small factory, each foreman has a safety committee. These committees include a safety supervisor from each shift, a factory council representative, and two or three workers appointed by the foreman. The personnel of the groups is changed frequently so that in time the majority of employes become familiar with the work of planning safety. Each departmental committee meets twice a month. Once a month all the committees in the tire division hold a joint meeting, as do all similar committees in the motor products division. The minutes are posted on plant bulletin boards. Insofar as possible safety committee meetings are conducted informally, as safety chats. It is felt that this elicits more thorough participation by every committeeman.

Factory Manager C. L. Moody, meeting with his executive staff once a week, never fails to attach particular importance to any safety items or matters of safety interest that have come to the attention of his staff during the week, but he lays aside definitely one meeting a month with the executive staff for safety discussion only, or at least primarily.

But the safety program does not end with the committees. All employes are encouraged to report near accidents, hazards or potential hazards on forms obtainable from any foreman.

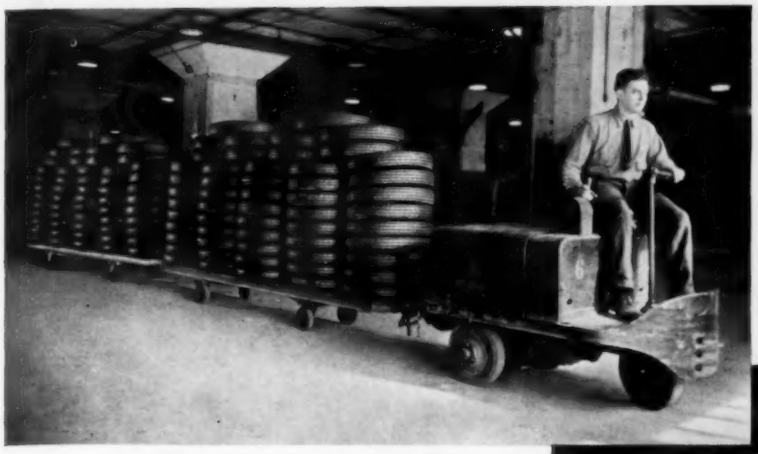
In the event of an accident two steps are taken: 1. Immediate emergency action to forestall a repetition of the mishap; 2. Immediate and complete investigation to determine not only the proximate condition which caused the accident, but also the basic cause. The latter might include such items as improper clothing or psychological factors. The equipment or condition which paved the way for the accident is studied and discussed by a group including the factory manager, industrial relations manager, safety supervisor, plant engineer, superintendent of divisional production, and the supervisor of the job. Then corrective action is taken.

The management maintains that no single department is more hazardous than another. It may involve more opportunities for hazards, but where further physical safeguarding is impossible, it is contended that the supervisor must train his men so thoroughly in operating procedure that an accident is unlikely.

Each month a thorough inspection is conducted by the safety supervisor, including housekeeping as well as physical condition of equipment. All departments are rated. Reports are made in duplicate, one being sent immediately to the supervisor of the department and the other to the factory manager. Once a month the latter writes a letter to every supervisor on the highlights of safety progress during the past month. Many of the posters received from the National Safety Council are adapted and modified to fit the peculiar, specific needs of a department.

To dovetail with the safety meetings and physical safeguarding, a program of physical well-being on the part of the employee is promoted. This begins with a thorough physical examination upon hiring. Once the employee's physical soundness is determined, every precaution is taken to preserve it. Health facilities include the full-time services of a plant physician, a completely equipped hospital, and a number of first aid men.

About 50 per cent of all hospital cases arise out of personal ailments—not incurred on the job, but having a definite bearing on the job nevertheless. For it is believed that a physical ailment, by disturbing mental



Trucking the finished tires to the inspection and wrapping department. A chain reinforces the coupling between trucks and tractor. The load is well balanced, and the stacks of tires are bound together.

Below: The tire carcasses come from above to the shaping drums. Another trip on the conveyors (background) takes them to the vulcanizers.

Top: Movable displays are used to teach safety as well as economy and production methods.

Aisles are kept clear so that stock may be moved safely. Each layer of material rests on a separate platform, so that the load cannot topple. Trucks are designed so that the operator can see through and beyond them. Handles at both ends facilitate their easy manipulation.

and emotional equanimity, is a potential accident hazard.

The plant physician periodically sends out letters to the homes of employes on the care of the body, preventives of common illnesses, cleanliness and similar matters. Every day the hospital reports of the previous day are checked as a possible guide to accident causes.

The employes' Mutual Benefit Society and the Relief Fund, maintained respectively through membership and voluntary contributions, are regarded as vital assets to safety, for if an employee is temporarily incapacitated or unable to work, he can still have the necessities of life.

Another item which is considered of paramount importance is safety outside the plant. All available literature on this matter is acquired and disseminated —not distributed to workers at machines, where it will be mislaid, lost or thrown away, but placed in automobiles or sent to the homes, where it will be read and considered.

Every opportunity to speak to outside audiences, particularly in schools, is eagerly grasped. For it is believed that the "outsider" or the student of today is the employee of tomorrow.

The Detroit plant, however, does not consider its safety program self-sufficient. It seeks and obtains information and cooperation from all other factories of U. S. Rubber Products, Inc. In this it has the guidance and expert assistance of a central safety director, Ernest W. Beck, who keeps each plant advised of the work of other plants and of new developments in equipment or safe practices.

One cannot escape the conclusion that a program so thorough—with so many ramifications yet so well integrated—is the result not only of careful planning, but also of sincere safety consciousness on the part of the management.

Safety at U. S. Rubber Products, Inc., has been found valuable not only as a humanitarian standard, but as a vital element of production and economics. And because of all these factors safety is applied in its broadest sense.

Largest Rubber Vulcanizer

CONSTRUCTED by the Adamson Machine Company, of Akron, the largest vulcanizer ever built for use in the rubber industry is currently being installed in the Akron factory of the B. F. Goodrich

Company. The huge vulcanizer, said to have been designed by the Goodrich engineering department in cooperation with Adamson, has a cubic capacity of 65,000 gallons, is 15 feet in diameter, and will be used to cure rubber-lined tanks, the vulcanizer being large enough to admit a standard sized railroad tank car. The entire unit is constructed of metal more than an inch thick and the door, which is to be operated by a hydraulic lift, weighs 15 tons. The vulcanizer was moved from the Adamson machine shop to the Goodrich factory on a special eight ton rig mounted on 16 large tires and drawn by three tractors.

Metallates—Metallic Phthalates

AROMATIC polybasic acids, such as phthalic acid, may be combined with metals to form relatively insoluble pigments which heretofore have not been employed in industry. Henry A. Gardner, of the Institute of Paint and Varnish Research, Washington, D. C., has prepared a number of such products and describes their possible applications in the September, 1936, issue of *Industrial and Engineering Chemistry*. He suggested that these combination products be given the generic name of "metallates" and so refers to them in the article.

Most of these metallic salts of phthalic acid are relatively insoluble in water and the commonly encountered organic solvents, and they may be incorporated in rubber and its derivatives, as well as in oil paints, varnishes, cellulosic compositions, and other substances.

In rubber, or its derivatives, Mr. Gardner found that the metallates decrease the effect of light which ordinarily destroys rubber and make it possible to predict the use of this material for exterior purposes heretofore not possible. The use of phthalates in rubber tire stock, according to the author, appears to increase strength. In some recent tests, he points out, with a compound made with 300 parts by weight of rubber, 10 parts of zinc oxide as an activator, 3 parts of stearic acid as a softener, 9 parts of sulfur as a vulcanizer, 2.4 parts of mercaptobenzothiazole as an accelerator, and 205 parts of lead phthalate as a pigment, after curing the compound for 30 minutes at 40 pounds per square inch steam pressure, a tensile strength of 3500 pounds per square inch was found.

Velv-o-Flex—A New Fabric

A DIFFICULTY long existing in the knitting of rubber is believed to have been overcome by the introduction of a new fabric, termed Velv-o-Flex, by the Lawson Knitting Company, Central Falls, Rhode Island, based on U. S. Patent No. 2,009,361. This difficulty covered the use of bare rubber thread in such a manner that the rubber did not show on either side of the fabric. Covered rubber cord of suitable gauge, of course, has been used satisfactorily in knitting for some time.

Velv-o-Flex is produced by the following method: At each feed of the machine a rubber thread is run in simultaneously with the textile fiber being used (cotton, silk or flax), but a greater tension is applied to the rubber to ensure a marked contraction in comparison with the textile fiber. The immediate effect of this contraction is to pull the rubber loops into a position where they occupy the least space, that is, at the inside of the fabric, the textile threads passing over from the face to the back of the fabric. In this manner the more bulky textile fibers are forced to the outside edges of the fabric.

With the further contraction which occurs, the fabric is pulled in both lengthwise and crosswise, closing the textile loops, which are already on the outside of the rubber threads, together. At this point the material presents a solid textile surface, the rubber completely disappearing from view with extreme stretching of the fabric being necessary to reveal its presence.

Contraction of the rubber thread serves a further purpose, i.e., by pushing the textile loops outward the material forms a very soft surface (from which it secures its trade-name). This soft surface can be napped on both sides if desired. Velv-o-Flex is said to be economical to produce, and to possess remarkable softness and high elasticity.

Microscopes in the Rubber Industry

(Continued from page 26)

and the standard specimen used for comparison lie closely together in the ocular without a dividing line; they are uniformly illuminated and always appear on the same level even though the specimens themselves are cylindrical or convex.

This microscope is suitable for examining shafts, bearings, interior threads of receptacles and, in particular, for welded seams. Fig. 9 shows the comparison between a good seam and a poor porous seam as shown by a micro-photograph taken with the instrument described.

Increasing attention is being given to the modern microsope sets though unfortunately the manifold possibilities of examination and comparison which they offer are not yet known to the extent to which they are entitled. The above explanations, which do not by any means treat the subject exhaustively, should nevertheless serve to show the growing importance of microscope technique in the rubber industry.

REFERENCES

1. Edgar Rhodes, *Ind. Eng. Chem.*, **27**, 1204 (1935).
2. Report on the Leipzig Spring Fair, *Chem. Fabrik*, **19-20**, 223 (1936).

TRANSMISSION as Related to the Rubber Industry

The History of Power Transmission in the Industry Is Traced from the First Water Wheel Used by Henry Goodyear Up to and Including the Latest Devices

By J. Haddon Davidson
Sales Engineer, Farrel-Birmingham Co., Inc.

IN 1837 Charles Goodyear took out his basic patent on the treatment of rubber by means of acid. This acid process permitted him to cover materials with rubber, but due to its adhesiveness it was a very impractical method.

In 1843 Henry Goodyear, brother of Charles, opened a factory at Naugatuck, Conn., known as the Samuel J. Lewis Co. In the summer of 1844 he introduced a steam process—working the gum without the use of solvents. It was not until the gum came to be ground and worked with steam heat, instead of being dissolved in turpentine, that the doubts as to the success of the manufacture were removed. In the same year, 1844, Charles Goodyear took out his basic patent covering the process of vulcanization of rubber. This patent was covered in America, France and England.

Shortly after this period, the date being somewhat obscure, the first water wheel ever used for transmitting power for the manufacture of rubber was installed at Naugatuck, Conn. Due to the fact that this vulcanized rubber was so much harder than any previous rubber that had been manufactured, they assigned the name "metallic" to the vulcanized product and hence, later on, was derived the name "Goodyear Metallic Rubber Shoe Co." This company was formed in 1845, being the same company which was originally the Samuel J. Lewis Co.

The question has been raised as to why Naugatuck was selected as the location of the first rubber plant. In checking up it has been found that Mr. Goodyear decided that the Naugatuck River, due to its rapid drop in elevation and also because it was quite narrow, permitted him to harness the power by damming the river at a much smaller expense than a river like the Connecticut River, and it was for this reason that the Naugatuck Valley was the site for so much manufacturing in the early days.

Practically every company thereafter that went into the manufacture of rubber used the water wheel as their power unit, there being various types of installations. Some installations were equipped with Mortise gears to give them the required reduction for a line shaft speed that would be satisfactory for the operation of the various mills and calenders. Some installations, where the speed of the water wheel was rather slow, were direct connected to the line shafts.

Introduction of Steam Engine

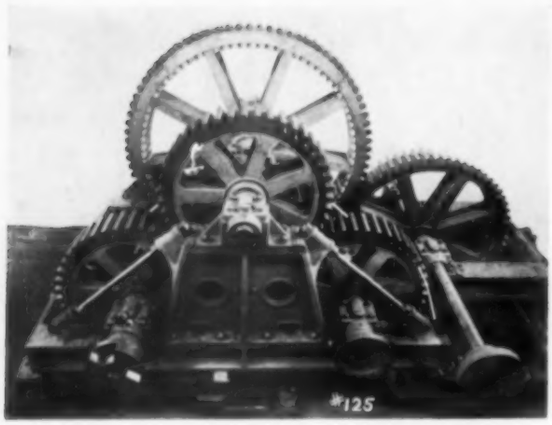
As the industry grew and the product improved, due to research work, more equipment was added to the original mill lines, more calenders were added and soon it became necessary for them to look for a better means or an increased means of power. Some installed additional water wheels, but as the production of the various plants increased, more steam was necessary for the curing of the various products and it was then decided that as long as a large amount of steam had to be supplied for the process, the next step was to go to the steam engine.

The steam engine gave them a more flexible condition. They were not at the mercy of the elements in the dry season to decide whether or not they would carry on production as in the days of the water wheel. During the flood period in the Spring, the water wheel was always an uncertain quantity, and for these reasons, as much as any, the steam engine rapidly replaced a lot of the water wheel installations.

In some instances, such as at Naugatuck, the original water wheel installation was tied in with the steam engine so that they could either run the plant by means of power from the water wheel or disconnect the water wheel and run the same equipment from

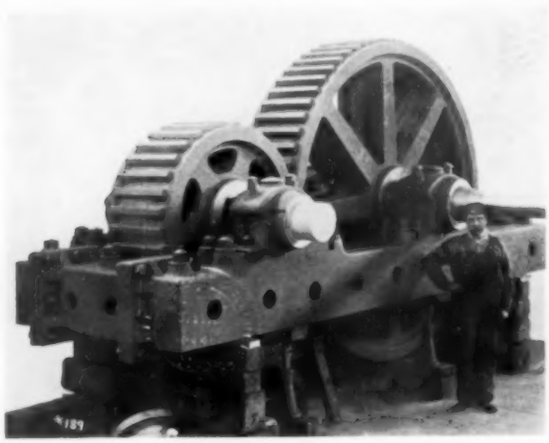
This paper was delivered at the Fall Meeting of the Rhode Island Rubber Club, held on September 25th, 1936, at the Pawtucket Country Club.

A view of the Village of Naugatuck, Connecticut, taken in 1865. The factory of the Goodyear Metallic Shoe Company was located directly behind the church visible in this scene. (Photograph, courtesy of the Naugatuck Savings Bank).



THE OLD

The two drives illustrated on this page show the early types of engine drives used in the rubber industry. At the left is seen a double reduction drive, the large gear, known as a mortise gear, having wooden teeth, each tooth being a separate piece held in position by a wedge. Below is reproduced an early type of engine drive intended for single line shaft. (Photos, courtesy of the Farrel-Birmingham Co., Inc.).



the steam engine. As I understand it, they also synchronized the two units so that they could run them both together, using the engine somewhat as a governor to control the speed of the water wheel.

There are a great many plants at the present time operating with steam engines, but each year finds fewer such installations. Many of the older plants have deemed it advisable to eliminate the steam engine due to the fact that they have to run their entire plant from this engine and when they have a breakdown of the head shaft, or any trouble is encountered with the engine, it means that their entire mill and calender room is shut down until repairs are completed.

A mill and calender room which is operated by a steam engine gives one an idea of the origin of the Rube Goldberg sketches when compared with a present day mill and calender room. In the engine driven mill rooms there are several line shafts running parallel with bevel geared lines running perpendicular to these lines, and quite often the engine is transmitting power to a mill and calender 150 or 200 feet away from the engine.

It is easy to see that an installation of this type is rather inefficient as misalignment of these long line shafts and cross shafts is inevitable and the friction load runs very high. Also the maintenance on such an installation became such a factor that it was necessary to take some steps to make a mill room a more flexible and more positive set-up for continued daily production.

Unit Horsepower Unknown

Up to this period very little was known about the consumed loads of any individual mill or calender. The total horsepower consumed was easily checked but the individual unit horsepower demand for the various mills and calenders was an unknown quantity. Furthermore, the chemists and chemical engineers were doing research work day and night to improve the structure of the finished product to provide longer life for the consumer and a cheaper article for the manufacturer. With the increased developments which were natural from this research work, all of the equipment was subjected to heavier loads.

The increasing of the compound in the finished product, making a dryer compound to make shorter cures, began to give the man in the power plant considerable trouble due to overloads, and it was this reason, as much as any, that forced the manufacturer to look to some means whereby he could have several power units in his plant rather than just the one central station.

In 1899, according to the best records that I have been able to locate, the first electric motor for the operation of rubber mills was installed. There were three motors installed—a 150, a 200 and a 300 HP motor. Most of the engineers were skeptical about motors, as regards the operation of mills especially, as no data had been tabulated which would give them any idea as to the power consumption of any individual size mill. Furthermore, they did not believe that the motors would handle the high peak loads which are always prevalent in mill and calender operation.

Speeds at which the mills should operate satisfactorily were also an unknown quantity, and with all these variables and unknown conditions one engineer's guess was as good as another as to what size motor should be installed. In order to assist the motor in handling peak loads it was decided to install either on the rotor shaft of the motor, or somewhere along the line, a flywheel, and all three of these motors were originally installed with flywheels.

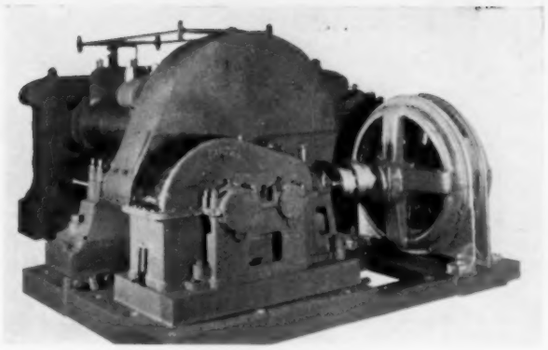
These motors operated through a cut spur reduction to give the proper mill line speed, the gears being coarse pitch and running open. The wear on these gears naturally was rapid, and it then became necessary to build some type of drive which would provide longer life. These drives were also extremely noisy.

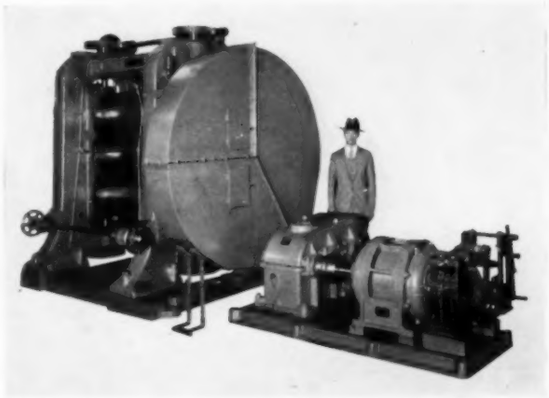
In 1902, we, as well as other manufacturers, began to manufacture cut spur enclosed drives, the main shaft and pinion shaft being carried in individual bearings on girder bedplates. This was quite an improvement over any of the previous installations, and this particular type drive was manufactured for several years by all of the various transmission builders who handled heavy equipment.

On the lighter type drives, as used at first, a rawhide pinion was mounted on the motor shaft, which ran with the cast iron reduction gear. This rawhide pinion, however, when subjected to shock loads, or if

THE NEW

On this page are shown the transmission drives for modern mills and calenders. These differ greatly in appearance and efficiency from the types used in the last century. At the right is shown an enclosed gear drive connected to an 84-inch sheeting mill. Below is shown a modern calender driven by individual motor with enclosed speed reducing unit. (Photos, courtesy of the Farrel-Birmingham Co., Inc.).





saturated with oil or grease in any way, would not stand up. After considerable experimental work a molded composition, such as Micarta, Fabroil, and many other such materials for the formation of the reduction pinions, was used with satisfactory results. This type of installation, however, was suitable only for use with motors up to approximately 100 HP.

Some time after 1909 and between that time and 1914, enclosed gear cases with bearings built as a part of the cases was the next step forward. Both gears and bearings were lubricated by the gears running in a continuous bath of oil. It was during this period that the cut herringbone gear came into play, and a good share of all enclosed reductions manufactured from that time on were equipped with cut herringbone gears. These gears were constructed with a gap in the center of the face to provide cutter clearance when machining the teeth on the gears. This gap necessarily called for a wider faced gear than was required and also proved to be of practically no value as regards the strength of the gears.

About 1923 we had the innovation in this country of the Sykes gear. With this particular gear it was possible to reduce the width of face of the gears and still operate at the same horsepower as was used on the wider faced older type helical gears. Most of the original Sykes enclosed reduction drives were equipped with babbitted sleeve bearings, and they are used by practically every rubber company in the country at the present time.

About 1930, and covering the period up to the present time, this type of enclosed drive manufactured by us, and also manufactured by a great many other transmission builders, was equipped with anti-friction bearings throughout, both the gears and bearings being lubricated from the splash within the case.

I have not made any mention of chain drives, but chain drives have been operating in the rubber industry practically from the start and there are a great many installations at the present time in which chain drives are used. There are places where chain drives are more practical than enclosed drives and chain drives will always be a factor in the industry.

Worm drives have also been used for a great many years and also will have their place in the industry.

I did not make any mention of rope drives when commenting on the various types of steam engine installations, but at the present time there are rope drives operating in conjunction with engines and these have proven to be very satisfactory in a great many applications.

We have found, after manufacturing transmissions of all kinds for the rubber industry for a great many years, that each year the demand for more power per unit has been apparent. This condition has all come about through the research work done by the chemical engineers who have greatly improved every type of rubber product made at the present time. Without hesitation I think that a great deal of the credit for the improvement in transmissions for the operation of rubber equipment is justly theirs, as they, through their efforts, have forced upon the machinery manufacturer the necessity for better and heavier transmission equipment.

Two New Para-Dors

THERE are several types of rubber products, such as rubber tiling, floor treads, certain types of tubing, etc., which call for definite types of deodorants or aromatics, requirements generally calling for a product that will not scent the compound but simply modify the odor. Two new Para-Dor aromatics have recently been developed by Givaudan-Delawanna, Inc., New York City, to meet these requirements. Designated as Para-Dors No. 7662 and 7663, these new aromatics in addition to being efficient as deodorants also have the advantage of having definite plasticizing value.

According to the announcement, the new aromatics were tested in comparison with a well-known petroleum softener in a compound made as follows: 37½ lbs. pale crepe; 14 ozs. sulfur; 2⅝ ozs. Thionex; 3 lbs. zinc oxide; 36 lbs. whiting; 10 lbs. barytes; and ¼ oz. green color. To this was added 3 pounds of the petroleum softener and the compound was cured at 56 pounds for 8 minutes. The same compound was then made up with ¾ pound of the two new Para-Dors, respectively, replacing the petroleum softener and cured similarly, with the result that the softening effect was equally as good with each of the Para-Dors when used in ¼ the concentration in which the petroleum softener was used, the odor after curing being mild and inoffensive. It was also observed that after two months of standing in the light the cured pieces containing the Para-Dors did not fade in the least.

DuPrene in Balloon Fabrics

THE prime function of balloon fabric is to prevent the escape of hydrogen or helium from the bag so that its lifting power will not be impaired. As a general rule the fabric is treated with a rubber cement. Two plies of fabric laid at oblique angles to one another are doubled or made homogeneous by interposing a layer of rubber, and then a protective film of cement containing aluminum powder is applied to one side, the cloth thus processed forming the bag or body of the balloon. When balloon fabric is subjected to the action of hydrogen under specific pressure, the gas must not escape through it at a rate greater than that determined by test as satisfactory.

Some time ago, officials of the Army Air Corps at Wright Field, Dayton, Ohio, began experimenting with DuPrene films in an attempt to learn what properties of this synthetic rubber material, other than that it was impervious to gas more than was natural rubber, could be adopted to the manufacture of balloon fabric. The series of tests and the findings of the Corps are interestingly described in the September, 1936, issue of the *Du Pont Magazine*.

A report issued by the Materials Division at Wright Field disclosed the fact that balloon fabrics treated with DuPrene not only resisted the passage of hydrogen better, but that both indoors and oudoors in direct sunlight it did not deteriorate as rapidly as rubberized fabric. One test showed that rubberized balloon cloth had a normal gas escapage of 15 to 19 liters per square meter in 24 hours, while DuPrene fabric, under the same conditions, allowed an escapage of only 1 to 3 liters. After six months of exposure to direct sunlight, the DuPrene fabric permitted an escapage of 11 to 17 liters of hydrogen while the normal rubberized balloon cloth had permitted the escape of from 70 to 80 liters per square meter.

In order to check these laboratory results under actual service conditions, an observation balloon was built by the Air Cruisers Corporation from fabric treated with DuPrene by the Vulcan Proofing Company. After exhaustive tests at Scott Field, near St. Louis, it was placed in actual service at Fort Sill, Oklahoma. According to the article, it has been in actual service for more than six months and has confirmed the laboratory tests described.

Rubber Plates for Book-Covers

ADAPTION of rubber plates for printing on book cloths has been retarded by three basic difficulties, viz: the plates called for a complete change in technique and machine set-up; they did not have sufficient resistance to abrasion and oil absorption to print with the regular inks; and, since they were hand-engraved, they offered no material advantages from the design standpoint. According to Harold Cadmus, Jr., in an article appearing in a recent issue of *Bookbinding Magazine*, these basic difficulties have been eliminated by the application of the physical possibilities for plate production to the molding method of rubber plate production. This is possible because the rubber plate is a duplicate plate, in the sense that electrotypes and stereotypes are duplicate plates, and have been given the proper physical characteristics for handling on standard bindery equipment by standard bindery methods.

The original form from which suitable rubber plates for printing on book cloths can be made includes almost any metallic relief printing medium, the more satisfactory, according to the author, being those composed of type set high and surrounded with bearers, mounted or unmounted engravings with screens not exceeding 85-line, and mounted or unmounted electrotypes.

The matrix is prepared in the accepted manner for producing rubber plates intended for general printing, with the exception that once the matrix is removed from the press and lifted from the original, it is ground, measured and a new press charge prepared. In this instance, the matrix is covered with a layer of vulcanized rubber, a sheet of special impregnated fabric and a sheet of specially treated steel. When the cure is completed the matrix is stripped off and the rubber plate is permanently fixed to the steel backing and, after the steel is trimmed square and close in a special type of shear, the rubber plate is ready for use.

Rubber plates made in this manner are not intended as a substitute for the metal stamps now used generally for book cloth printing, but rather permit new and different treatment in book cover decorations on equipment and machinery currently used by bookbinders. They may be used on natural finishes, vellums, buckrams, art canvases and patterned cloths where the grain depth is not more than 5,000ths of an inch. The cloth may be starch-filled, pyroxylin-coated, pyroxylin-impregnated or unfilled.

Mr. Cadmus points out that where printing of the cloth off the boards offers economies in production, the use of rubber plates on small cylinder-press equipment gives the advantage of securing better design, coverage, durability of ink and color, generally accomplished only on long runs with letterpress methods.

Bond Rubber Base Adhesive

SAID to resist drying and crumbling for extended periods, a new type of rubber base adhesive, known as Bond Cement No. 854, has been developed by the Bond Adhesives Company, New York City. The new adhesive is non-inflammable, contains no acids or solvents, and may be thinned with water (the only solvent) prior to setting. It may be applied on any combination of paper, felt, leather, metal, glass, wood, marble, alabaster, plastics, etc. It may also be used on surfaces which have been varnished, lacquered or enamelled without injury to such surfaces.

Bond Cement No. 854 is finding application as a flexible padding cement for use by printers and binders, for splicing emery cloth and paper, for labeling on glass, tin containers and molded plastic packages, etc. It is also being used by manufacturers of carpet materials as a binder along the edges of the carpet to prevent raveling.

Powdered Slag as Filler?

THOMAS ARNOLD, of Bradford, Yorkshire, England, claims to have perfected a process for the utilization of powdered blast furnace slag as a compounding material in rubber. It is claimed that a tire, with a tread made up with two-thirds of the powdered slag, has already traveled over 20,000 miles. Soles, boots and other products are also said to have been made. Another proposed use for the material is in a low cost paving surface.

Rubber Outings of the "Good Old Days"

The above reproduction is the fourth in a series of photographs of outings and picnics held about two decades ago, the first of which appeared in our August, 1936, issue. This photograph shows the outing of the Rubber Club of America, held at Peddock's Island, on July 16, 1912. This organization was successor to the New England Rubber Club and forerunner of the Rubber Manufacturers Association. Many of the members and guests in this photograph are still alive and active in the trade. How many can you recognize? This "old-timer" is reproduced through the courtesy of R. L. Rice, of the Hood Rubber Company, Inc.

New Equipment

Sankey Foot Guards

REPRESENTING a decided departure from conventional foot guard methods, according to the manufacturers, the Improved Sankey Foot Guard has been developed by the Ellwood Safety Appliance Company, Ellwood City, Penna. The guard is made either of aluminum-alloy or galvanized steel, corrugated for

resistance to impact, a guillotine test showing either type of construction withstanding a 300-foot-pound impact, that is, a 100 pound weight dropped from a 3 foot elevation. The Sankey guard is said to be easy to put on and remove, cannot be kicked off and fits any type or size of shoe. Its three-point contact, according to the company, gives perfect balance, snug fitting and eliminates vibration, with no pressure caused at any point. It is fitted with silent tread and adjustable cowhide strap with a quick spring fastener. A single aluminum-alloy guard weighs only 12 ounces, equivalent to the weight of a low-cut rubber overshoe.

Thwing Testing Machine

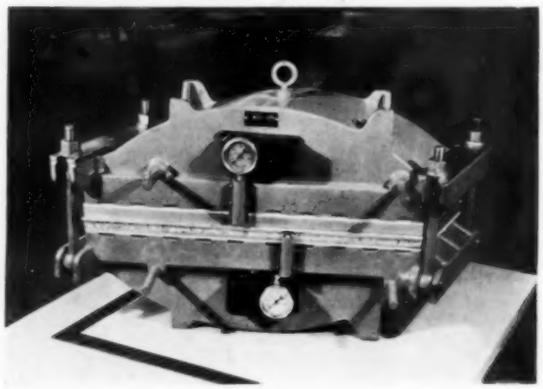
AN improved machine for testing the tensile and elongation of rubber, as well as of paper, textiles, tape and fine wire, has recently been announced by the Thwing Instrument Company, Philadelphia, Penna. The test specimen is mounted between two jaws on the device, the lower one of which is secured to a piston projecting up from the power cylinder, the upper one being attached to the short side of a swinging lever. The lever is fitted with a weight that can be placed at various positions along the long side of the lever. As the lever is moved, a graduated quadrant provides readings. When and if the specimen breaks, an escapement on the machine prevents the lever from swinging back to zero. Power is provided by a motor-driven variable-delivery pump which supplies test movements ranging from 1 inch per minute to 24 inches per minute. Oil is used as the hydraulic medium and is stored in the base of the machine.

Dynstat Testing Machine

A NEW type of testing machine for determining the impact strength and bending strength of hard rubber, as well as plastics and other molding materials, has been added to the Dynstat line available in this country from Testing Machines, Inc., 462 West 34th Street, New York City. Designed by Louis Schopper, two hammers are provided for the Izod impact tests to allow for tests of 0 to 10 cm./kg. working capacity and 10 to 20 cm./kg. working capacity. The tests can be carried out from a drop angle of 60° or 90°. For bending strength, ranges from 0 to 5, 0 to 9.8 and 0 to 40 cm./kg. are provided. The new Dynstat is also equipped for measuring impact bending strength. In this connection, the specimen is placed on an anvil on the machine and a pendulum is allowed to fall free from a pawl. An idle pointer on the left then indicates the rise of the pendulum on the corresponding scale after the impact, and reading of the energy absorbed is thus provided. To make a static bending test, the specimen is clamped on a rotation axis on the testing device and subjected to bending by the turning of the center part of the scale dial, to which it is also secured, by means of a crank and worm gear. This action causes the pendulum to move to the right and shows the magnitude of the bending moment as measured to the right-hand idle pointer.

Aluminum One-Man Vulcanizer

FOR vulcanizing splices in transmission or conveyor belting up to 28 inches wide, the B. F. Goodrich Company, Akron, has developed the Goodrich No. 28 Aluminum One-Man Vulcanizer. Through the use of



aluminum the weight of this unit has been lowered to less than 300 pounds, said to be 75% lighter than similar vulcanizers of this type and size. Either of the two platens can be handled by one operator, two men lifting the complete unit for transporting to another part of the factory. This new vulcanizer is able to vulcanize narrow transmission belts up to 10 inches, 6 ply, in one heat. It is available in 110 or 220 volts A.C. or D.C., including one A.C.-D.C. model. The D.C. types may also be used on alternating current of equal voltage by changing the plug-in connections on the side of the machine. The vulcanizer comes equipped with curing pad and galvanized sheet covers, with no clamping bars necessary.

Book Reviews

The Chemistry of Rubber. By H. Freundlich. Chemical Publishing Company of N. Y., Inc., New York City (Exclusive agents in the U. S.). 72 pp. $1.25.

This small book treats with latex and rubber from the colloidal point of view and devotes a chapter to a discussion of each. In the first section, the author discusses the composition of latex, electrophoresis, preservation and concentration and coagulation. The structure, mastication, swelling and solubility, vulcanization and oxidation of rubber are treated with in the second section. Although much of the information covers fundamentals the author gives the results of several self-conducted investigations. The structure of latex particles from the botanical point of view is also discussed in the book which contains 13 diagrams.

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Chemical Engineering Catalog—1936. Published by the Reinhold Publishing Corporation, 330 West 42nd Street, New York City. 916 pp.

With the 1936 edition of the "process industries' catalog," the Chemical Engineering Catalog "comes of age," this being the twenty-first annual edition. It is larger by approximately 50 pages than the previous edition. The innovation introduced last year in permitting the inclusion of complete catalogs prepared individually by the firms concerned, although the basic principle of restricting copy to actual technical data has been closely adhered to, has been continued in the latest number, as has the separate index of laboratory and reagent chemicals in the Chemical Section. The 1936 catalog, as usual, consists of an alphabetical index, trade name index, equipment and supplies section, chemicals and raw materials section, manufacturers' catalogs, and a section devoted to a list of technical and scientific books.

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Handbook of Chemistry and Physics. (21st Edition). Published by the Chemical Rubber Publishing Company, Cleveland, Ohio. 2028 pp. $6.00.

This twenty-first edition of the Handbook represents a 23 year accumulation of data for the scientist and engineer brought completely up-to-date and contains 64 pages more than the preceding volume. Several changes have been made including a revised (and improved) form for the numerical tables in the Mathematical Section, as well as an enlarged photographic section. For convenience, the Handbook is divided into five sections, i.e., Mathematical Tables; Properties and Physical Constants; General Chemical Tables; Heat, Hygrometry, Sound, Electricity and Light; and Quantities and Units—Miscellaneous Tables. These Handbooks are prepared by a group of collaborators and contributors, headed by Charles D. Hodgman as Editor-in-Chief.

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The Rubber Industry Study. (Work Materials No. 41). Division of Review, National Recovery Administration, Washington, D. C. 202 pp.

Prepared by members of the Industry Studies Section of the N. R. A.'s Division of Review, this report constitutes a study of the rubber industry as to its extent, its relationship with labor, users and related industries, and treats with the major and special problems of the industry. It was undertaken for the chief purpose of recording the formulation, operation and effect of provisions in the ill-fated rubber codes affecting prices. The report, for the most part, attacks the industry for its lack of cooperative spirit under the codes, although L. C. Marshall, Director of the Division of Review, in a foreword to the report, states that "it is not reasonable to expect that the long-standing and involved problems of the industry could be adequately met in the short time these codes were in effect" and expresses the belief that the members preparing it were "too severe in their criticism."

Booklets, Catalogs, etc.

Does Unionism Really Benefit American Labor By Allen W. Rucker in collaboration with N. W. Pickering. Published by the Farrel-Birmingham Co., Inc., Ansonai, Conn. 18 pp.

That the prevailing theory of higher hourly wage rates and restricted working hours does not operate to produce greater income or more employment for factory labor is the theme of this study based upon the end results reported in the U. S. Census of Manufacturers, which has been released as the 18th in a series of booklet-editorials prepared by the co-authors. The study embraces twelve major non-durable goods industries accounting for almost 2,000,000 factory wage-earners. For the industries and periods examined, the co-authors point out that "the official record of industrial operation fails to confirm the benefits predicted by the theory."

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Brown Air Operated Controllers. Brown Instrument Company, Philadelphia, Penna. 32 pp.

This catalog (No. 8901) covers the complete line of Brown air operated controllers and explains in simple, non-technical language their principle of operation. It contains many diagrams illustrating the construction of these controllers, the methods by which control units may be interchanged and the method for "tuning in" on throttling range and automatic reset.

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Care and Cleaning of Milking Machines. By Alexander Hay. Published by the Rubber Growers' Association, Inc., 19 Fenchurch St., London, E. C. 3., England.

The fourth in a series of bulletins devoted to rubber and agriculture, this booklet, as its title indicates, is devoted to a discussion of methods used in the cleaning of milking machines equipped with rubber parts by washing, rinsing, brushing and other methods. Illustrations carry out the theme of the booklet.

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Boiling Water Level Control. McDonnell and Miller, Wrigley Building, Chicago, Illinois. 32 pp.

Containing a series of illustrations and descriptions of the company's float operated valves and switches, this catalog also includes a number of articles explaining in general the importance of boiler water level control from the standpoint of economy, investment, etc. Company items include safety feeders and combinations, low water cut-offs, pressure controls, valves, etc. Installation data is also offered.

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Bakelite Molded. (Seventh Edition). Bakelite Corporation, 247 Park Avenue, New York City. 48 pp.

This booklet, seventh of its kind, contains a complete description of Bakelite, its characteristics, properties and applications in various industrial fields. Profusely illustrated, it not only gives examples of finished Bakelite products, but also describes molding equipment and mold designs. Tables on the physical, mechanical and electrical properties of various types of molding materials, such as cellulose-filled, mineral-filled and fabric base materials, are also included.

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Dowtherm (for High Temperature Heat Transfer Systems). The Dow Chemical Company, Midland, Michigan. 36 pp.

The applicability of Dowtherms, special chemicals devised for bridging the gap between high-pressure steam and mercury with an alternate choice of either a liquid or a low-pressure vapor system, is fully described in this catalog. The servicing of Dowtherm systems and the selection and construction of apparatus are covered. Several data tables are included, one showing the physical properties of Dowtherm compared with water.

Editorial Comment

"Scare Talk" vs. Actuality

LABOR leaders in the rubber industry have been content thus far to label all talk of decentralization as "mere threats" sponsored by the tire manufacturers to "put the fear of God" into rubber workers. But recent events should prove, even to disbelieving labor leaders, that decentralization is being forced by the highly unsettled labor conditions in Akron. Goodyear has purchased a plant in Windsor, Vermont. A new addition is being constructed by Goodrich at its Oaks, Pennsylvania, reclaimed rubber plant to permit tire and tube manufacturing. General has bought a factory at Wabash, Indiana, presumably for the sole production of mechanical rubber goods, but one that could readily be converted to the production of tires.

All of these steps might be classified under the head of expansion, but most of them are being made of necessity to protect production facilities. Tire manufacturers for months have plainly stated that business was drifting from Akron to other centers because of the irregular labor relations. William O'Neil, president of General Tire, has been most emphatic and outspoken on this score. But again labor leaders branded it as "scare talk."

The decision of the Ford Motor Company, however, to erect its own tire factory at Dearborn cannot be classed as "scare talk." Once completed, this factory will inevitably result in loss of production at Akron factories, since Firestone produces approximately 50% of Ford's original equipment requirements, with Goodyear and Goodrich supplying another 35%, the balance going to a few smaller producers. According to authoritative sources, Henry Ford reached the decision to build his own tire plant after a two-year survey of labor conditions in the industry. And remember, Ford is estimated to consume 20% of all original equipment tires produced.

The handwriting is on the wall. Tire business has been drifting from Akron for months. Goodyear no longer produces tires for Sears-Roebuck; Goodrich has cancelled its Atlas contract; Ford is building his own factory; other manufacturers securing private-brand tires from Akron factories are known to be considering early changes. Decentralization of the tire business from Akron was inevitable for economic reasons. The pace of decentralization, and direct loss of tire business, must be laid at labor's door.

Continuance of "sit-down" strikes, such as those which forced a shut-down of the Goodrich factory for several days last month, must be eliminated by labor itself, which, unfortunately for the laborer, cannot decentralize along with the industry.

Another Threat to Tire Makers

ONE loophole offered to certain types of manufacturers to avoid charges of price discrimination under the terms of the Robinson-Patman Act is to open or expand a line of company-owned stores. Manufacturers in all industries are seeking some method to avoid incrimination under this clause, and since company-owned stores are not covered by the Act, such stores can sell merchandise at distinctly advantageous prices over competitive brands. They also offer an outlet for some manufacturers to maintain production volume in cases where the act forced them to lose certain private-brand business because of contracts involved. Especially is this true in the rubber industry, where Goodyear and Goodrich cancelled contracts with Sears-Roebuck and Atlas, respectively, and are faced with the problem of increasing sales through other channels. If any rubber manufacturer, however, is contemplating inauguration or expansion of company-owned stores, we hasten to give a word of warning.

Shortly after the passage of the Robinson-Patman Act, its sponsors realized that there were flaws in its purpose. One of these was the loophole left through company-owned stores. Therefore, Representative Wright Patman, of Texas, is taking steps to remedy the flaws. He has already drafted a bill aimed at the elimination of manufacturers from the retailer's business and vice-versa.

According to Representative Patman the proposed bill, which will probably be introduced at the next session of Congress, would be "constitutional as to all interstate transactions, which would make it almost 100% effective." The measure would become effective three years after its passage.

Considerable thought should be given to this proposed bill. For several years manufacturers held in disdain the possibility of the Robinson-Patman bill ever securing Congressional and Presidential approval. Session after session rejected it. The bill was rewritten and revised many times. Suddenly it secured passage and became a law.

Although it is far too early to determine whether the Robinson-Patman Act is the Moses to lead the independent retailer out of the Red Sea, since its constitutionality on approximately twenty-five points is to be determined by the Supreme Court in the Fall and Winter, or whether it will prove to be anathema to the manufacturers (although it gives indication of the latter), both manufacturers and retailers should carefully watch Washington activities on this latest proposed bill a copy of which has already been released by "Congressional Intelligence."

CURRENT • NEWS
of the Rubber Industry

OCTOBER, 1936

LABOR SITUATION REMAINS STRAINED

Closing of B. F. Goodrich Factory Almost Leads to a Complete "Showdown" Between Rubber Manufacturers and the Union

An all-Akron "showdown" with the rubber union almost occurred last month with the closing of the B. F. Goodrich plant pending a settlement of a series of "sit-down" strikes. It is safe to vouchsafe the statement that if the trouble at Goodrich had not been quickly settled there is a strong possibility that all of the larger rubber manufacturers in Akron would have been shortly involved in a real "showdown" with the United Rubberworkers of America.

The trouble at Goodrich is said to have started with a "sit-down" on September 21 in the braided hose department, union men objecting to non-unionists repairing a machine. The department was closed, and the next night a "sit-down" took place in the tire department followed by suspension of operations in the hard rubber and belt departments.

Goodrich Shuts Down Plant

At midnight on September 22 Goodrich announced complete suspension in all divisions of the factory because of the series of departmental "sit-downs." The factory was closed, although T. G. Graham, vice-president of Goodrich, denied that it was a lock-out and S. H. Dalrymple, president of the international union, denied it was a strike.

On September 24 about 3,000 members of the Goodrich union local voted almost unanimously to return to work on the understanding that Goodrich agreed to expedite the adjustment of grievances, although the company made no concession on the grievance which is said to have started the controversy, and the union agreed to educate its committeemen on the procedure to be followed.

Incidentally, delegates to the annual convention of the United Rubberworkers, which was held in Akron the week of September 14, voted down a proposed resolution to outlaw "sit-down" strikes, although penalties, based on a section of its old constitution, were provided for unauthorized stoppage of work. The Goodrich factory was partially reopened on September 26.

52,000,000 Tires

P. W. Litchfield, president Goodyear Tire and Rubber Company, Akron, makes the prediction that tire production will reach a total of 52,000,000 units this year. In 1906, when automobile production really got under way, the total number of units reached the sum of 800,000. Tire production in 1936, according to Mr. Litchfield, totals 50 per cent of all rubber products output in the United States.

A walk-out of 90 employes caused the closing of the Bowling Green Rubber Company, Toledo, Ohio, on September 14. Union spokesmen claim that they presented a contract demand to Stanley Roberts, president of the company, and called the walk-out when their demands were refused. These unionists are members of the Automotive Workers Union. Mr. Roberts, however, signed a contract with the Bowling Green Employes Association, calling for 5 to 10% wage increases and recognition of seniority rights, and claims that striking employes are in the minority.

Trouble also occurred at the plants of the R. C. A. Rubber Company, in Akron, and the Maple City Rubber Company, at Norwalk, Ohio. Regular shifts at R. C. A. were temporarily disrupted when a labor dispute, said to be the result of a misunderstanding, arose. The dispute was quickly settled. At the Maple City factory approximately one-third of the employes walked out and established picket lines around the plant charging that "dangerous conditions" were existant in the plant. This dispute has not yet been arbitrated.

O'Neil Makes Accusations

Charging that unionization caused the downfall of the India Tire Company, William O'Neil, president, General Tire and Rubber Company, Akron, in a letter to employes, accused some member of the company with "tipping off" competing rubber plants as to impending "sit-downs" at General's factory. He again warned employes that continued labor disturbances would result in General Tire leaving Akron. The letter particularly attacked union leaders branding them as "the revenue agents of the labor racket, the guys who collect your dues."

FORD TIRE PLANS CALL FOR FACTORY

Rumor Develops Into Fact with the Announcement that Construction of a Tire Factory Has Been Authorized at Dearborn, Michigan

Although rumors have been rife for years to the effect that the Ford Motor Company would produce its own tires, it now seems apparent that the rumors are to become fact. According to *Automobile Topics,* Henry Ford has authorized the construction and equipment of a new tire factory at Dearborn, Michigan, with an initial capacity of 5,000 tires per day.

The ever-current rumors were revived recently when a group of tire machinery manufacturers were called to Dearborn, although the purpose of the conference was kept highly secretive. It is reported that the decision to erect a tire factory was partially due to the unsettled labor conditions currently prevalent in tire factories throughout the country, particularly in Akron, and is believed to be a direct challenge to the rubber union.

5,000 Tire Initial Capacity

Plans are said to call for a building schedule that will place the new factory in operation within six months or less. Although initial capacity has been set at 5,000 tires daily, it is understood that additional capacity will be provided for the production of tires up to as high as 25,000 per day. Representatives of tire building equipment houses are believed to have provided the Ford company with estimates based on this rate.

Ford is said to purchase approximately 20% of all original equipment tires sold, about half of this business going to Firestone, 35% to Goodrich and Goodyear, with the balance being divided among a group of smaller companies. Because of Henry Ford's close association with Harvey D. Firestone, Sr., it is probable that little business will be taken away from Firestone once the Ford tire plant is completed, but that the other tire producers will lose out.

The decision is said to be based on a study of the labor situation in the tire manufacturing field over a two year period, the result of which led to the authorization of the new tire factory at Dearborn.

ATLAS TIRE STATUS REMAINS IN DOUBT

The status of the Atlas tire, brand name of the Atlas Supply Company, continues to be surrounded with an air of secrecy insofar as its production source or sources are concerned. Heretofore Atlas tires were produced by both the B. F. Goodrich and the U. S. Rubber companies on a contract basis, but Goodrich voluntary cancelled its contract with Atlas last month "because of the possibilities that this contract might be in violation of certain provisions of the Robinson-Patman Act," according to President James D. Tew.

According to conflicting rumors, U. S. Rubber has both cancelled its contract with Atlas and has assumed the entire production of Atlas tires. While no statements have been forthcoming from either of the two companies, it is believed, that at least for the present, U. S. Rubber is producing all of Atlas' requirements. F. H. Bedford, Jr., president of the Atlas Supply Company, which is owned by a group of oil companies including Standard Oil of New Jersey, recently stated that his firm was amply stocked with tires to cover requirements for some time to come.

There are several possibilities with regard to the present situation: first, that a new contract may be worked out with Goodrich on a basis satisfactory to the terms of the Robinson-Patman Act; second, U. S. Rubber may assume under contract, if it has not already done so, the entire production of Atlas tires; and, third, the Atlas Supply Company may split its requirements up among the smaller tire manufacturers as did Sears-Roebuck when Goodyear cancelled its tire contract.

Atlas tires are distributed not only through the stations of the oil companies, but also through independent outlets. It is reported that approximately 30,000 outlets from coast to coast are involved. Sales of Atlas tires were started in 1929 with a total of 1,785,000 being reported sold for the year of 1935. Goodrich assumed the Atlas tire contract when it acquired the Miller Rubber Company.

Raise Dutch Export Tax

In order to offset the drop in the guilder, the government of the Netherlands East Indies has raised its export duty on native rubber from 37 to 47 guilders per 100 kilograms, dry weight, effective September 30. The drop in the guilder would have had a tendency to increase native rubber production if the export rate had remained at its former figure. The latest advance in the export duty amounts to a 27% jump, the current rate of 47 guilders being equal to approximately 12 cents in American money. With rubber selling at about 16½ cents, the native rubber grower in the Netherlands East Indies now secures a return of approximately 2 cents per pound for his production.

Coming Events

October 16. Chicago Group, Rubber Division, A. C. S. (Ladies' Nite), New College Inn, Hotel Sherman, Chicago, Ill.

October 29-31. American Physical Society (including the Society of Rheology). Hotel Pennsylvania, New York City.

November 4. Los Angeles Group, Rubber Division, A. C. S. Los Angeles Athletic Club, Los Angeles, Calif.

November 11-18. National Automobile Show, Grand Central Palace, New York City.

November 30-December 4. American Society of Mechanical Engineers, 29 West 39th St., New York City.

December 18. New York Group, Rubber Division, A. C. S. (Xmas Party), Building Trades Club, 2 Park Avenue, New York City.

April 12-15, 1937. Rubber Division, A.C.S. Chapel Hill, North Carolina.

September 13-17, 1937. Rubber Division, A.C.S. Rochester, N. Y.

RUBBER SYMPOSIUM HELD IN HOLLAND

One of the most important rubber symposiums from a scientific standpoint was scheduled to be held in Delft, Holland, the first week of the current month, under the auspices of the Colloid Chemistry Section of the Netherlands Chemical Society, with authorities in special lines of rubber activity participating. The names of the participants and the subject matter of their scheduled addresses follow herewith:

Prof. Dr. G. van Iterson—on the formation of rubber in the tree, its significance in the life of the tree, and its natural coagulation; Prof. Dr. O. de Vries—on the colloid chemistry and coagulation of latex, in special relation to the plastic properties of rubber; Prof. Dr. J. P. Wilbaut—on the chemical structure of natural and synthetic rubbers, polymerization, depolymerization and the properties of the double bonds; Dr. J. R. Katz—rontgenspectography of natural and synthetic rubbers; Dr. A. van Rossem—on new insights into the origin of the vulcanization process.

Dr. R. Houwink—on the structure of the macromolecules in relation to the elastic and plastic properties of rubber and shape and deformability of the molecules; Dr. J. Hoekstra—on the relation between reversible and irreversible deformations with rubber; C. J. Rondberg—on new processes in the treatment of raw rubber; Dr. J. G. Fol—on latex applications; and Dr. A. J. Wildschut—on the electrical properties of technical rubber mixtures.

GENERAL TIRE BUYS FACTORY IN INDIANA

Plans for entering the mechanical rubber goods industry were announced by the General Tire and Rubber Company, Akron, coincident with the purchase of a factory at Wabash, Indiana. The company exercised an option it held on the office and factory building which formerly housed the Relay Motors Company, in Wabash, the option being approved by the court which was acting as trustee for the defunct motor concern.

According to W. E. Fouse, General vice-president, orders have already been placed for machinery and repairs on the buildings, with plans calling for the start of operations by December 1. Approximately 500 persons are expected to be given immediate employment when the plant gets under way.

The Wabash factory, which covers 30 acres and has a total floor space of more than 200,000 square feet, will not be used for the production of tires or tubes, according to President William O'Neil, but will be devoted exclusively to mechanical rubber goods. General Tire has been seeking an auxiliary plant to augment its Akron tire production, in addition to seeking a site for a mechanical goods plant, and early rumors had it that the company intended to devote a section of the Wabash factory to such use.

Mr. O'Neil also pointed out that no more than 20 or 30 persons in the Akron plant will be affected "because at present our mechanical goods operations are not very extensive."

FLINTKOTE CO. PLANS EXPANSION PROGRAM

A plant expansion program involving the expenditure of $2,000,000 is planned by the Flintkote Company, East Rutherford, N. J., according to I. J. Harvey, Jr., president, including the construction of additional facilities in the automotive division at the main factory of the company.

The program calls for the erection of a felt and boxboard mill at Los Angeles, an asbestos plant at East Rutherford, and other buildings and equipment. Flintkote already has under construction an asbestos plant in Chicago Heights, Illinois, which is expected to be completed shortly.

Broadcast Features DuPrene

A brief description of DuPrene, as well as several of its applications, featured the "Cavalcade of America" broadcast sponsored by E. I. du Pont de Nemours and Company on September 23, over the Columbia Broadcasting System. The company has recently launched a comprehensive program to stimulate the acceptance of DuPrene products both from the trade and public viewpoints. The program embraces broadcasting, magazine advertising, broadsides, etc.

ASK $250,000 IN SUIT AGAINST OHIO RUBBER

Charging duplication of a trade-mark on rubber cushion motor supports, the P. O. B. Company, Inc., Cincinnati, filed two suits against the Ohio Rubber Company, of Willoughby, Ohio, in the United States District Court, at Cleveland, on September 19th. One suit asks an injunction against continuance of the alleged duplication; the other asks a penalty of $250,000.

The P. O. B. concern claims that Ohio Rubber falsely marked 2,500 of its rubber cushion products with numbers of patents actually held by the plaintiff and seeks to recover $100 in damages for each of the alleged false markings. When penalties of this type are ordered by a Federal court, half of the sum is paid to the plaintiff, the other half going to the government. In filing this suit, the Cincinnati firm submitted 2,500 affidavits in which persons purchasing Ohio Rubber's products claim they did so with the belief that they were manufactured by the plaintiff.

The total number of affidavits, plus actual charges, comprised one of the largest briefs ever filed in the Federal Court of Cleveland.

IMPROVEMENTS TOLD AT GOODYEAR RALLY

General improvement of conditions in the rubber field were stressed by speakers addressing the 16th conference of Goodyear superintendents held in Akron early this month. The conference, which is held annually, is comprised of superintendents from the 18 Goodyear plants in the United States and foreign countries.

W. F. Bloor, Goodyear's chief statistician, told the conference that there were only 18% fewer persons employed at present in the manufacturing industries than in 1929, and that wages in the rubber industry are running higher than those in any comparable industry and well above the average, with Goodyear wages running at a level of $1,600 a year as against an average of $1,250 a year for the country. He predicted appreciable increases in the consumption of crude rubber and cotton in 1937, as well as a 10% increase in new car production, 20% in new trucks, 50% in bicycles and 100% in cabin type trailers. In concluding his address, Mr. Bloor stated that tires for original equipment this year will reach the all-time record of 22,000,000, due partly to the fact that almost all car manufacturers now furnish a spare tire with each new car.

A. H. Zieske, manager of the Goodyear cotton plantations in Arizona, said that there would be a bumper crop of cotton this Fall. He compared the long staple cotton grown in Arizona to that "used only in the manufacture of highest quality passenger and truck tires" and claimed that it was "comparable in quality to the famous Egyptian cotton grown in the Nile valley." Arizona, stated Mr. Zieske, is the only spot in America which has successfully grown long staple cotton, growing six to seven feet high "while Southern cotton grows about three feet high."

A picture of the rapid business strides being made in England, in spite of or because of the war scare threatening Europe, was brought to the conference by Mr. F. A. Steele, general superintendent of the Goodyear Tyre and Rubber Company, Ltd., of Wolverhampton, England. He has been in charge of the British branch for two years. Mr. Steele said that unemployment in England has fallen by half a million over last year aided in part by England's extensive rearmament program. Automobile registration has passed the two million mark in England, according to Mr. Steele.

Henderson Co. Disbanded

The final chapter in the history of the Henderson Tire and Rubber Company, Bucyrus, Ohio, was written early last month when deeds were filed for the sale of the real estate to John Q. Shunk and Catherine Fegley. According to the deeds, Mr. Shunk purchased the bulk of the property for $16,000, the sale being made under orders from the referee in bankruptcy. The machinery and equipment was sold several months ago and the plant is almost completely dismantled.

RUBBER BIBLIOGRAPHY TO APPEAR SHORTLY

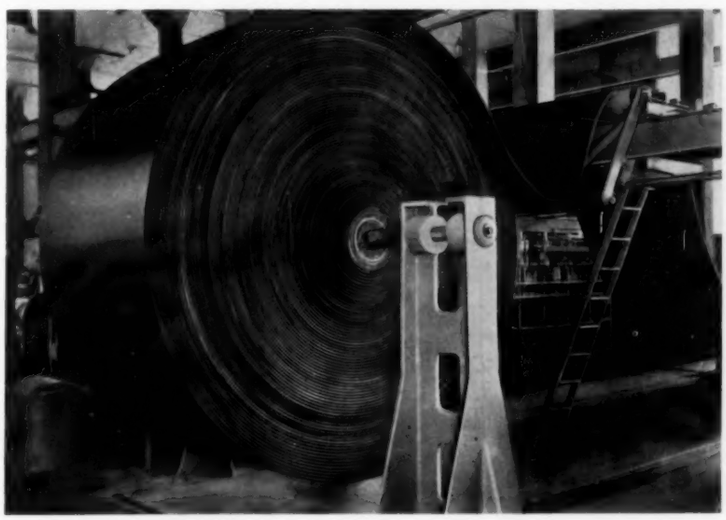
The first edition of the Annual Bibliography of Rubber Literature (Excluding Patents), covering the year of 1935, will make its appearance within the next week. Compiled by Dr. Donald E. Cable, technical librarian, General Laboratories, U. S. Rubber Products, Inc., Passaic, N. J., the bibliography will be published by THE RUBBER AGE, and will sell for $1.00 per copy. In addition to the references of rubber literature which appeared in journals all over the world, the first edition also contains a Directory of Rubber Chemicals, including brand name, manufacturer and classification break-downs.

Dr. Cable is qualified to edit and compile this bibliography which will include more than 2,500 references. In his present position he reviews hundreds of publications dealing with every phase of the rubber business. The bibliography will be 128 pages, paper bound, 6 x 9 inches.

Inland Leases Warehouse

In order to store inventory temporarily during the carrying out of its remodeling and building program, the Inland Manufacturing Company, Dayton, Ohio, has leased a three-story building adjacent to its factory for a six-month period.

LARGEST ROLL OF CONVEYOR BELT IS COMPLETED



What is believed to be the largest roll of conveyor belt ever attempted has recently been completed by the Mechanical Rubber Goods Division of the U. S. Rubber Company in its Passaic, N. J., factory. The roll, seen above, stood 10 feet-10 inches high before crating and weighed over 15 tons. Of the U. S. Matchless brand, the belt is a 60-inch-10 ply type, and is 1,355 feet long. While there have been longer and wider belts produced in the past, there are none as far as is known combining so much length, width and thickness. No other piece of mechanical rubber goods of comparable weight has ever been produced. This giant conveyor belt is to be installed in the largest copper mining unit in Arizona as a part of equipment that will make possible the handling of 20,000 tons of ore daily. The widest belt previously used in connection with this equipment measured 48 inches. The belt is made to withstand rough use.

FALL MEETING HELD BY NEW YORK GROUP

Approximately 150 members and guests attended the Fall meeting of the New York Group, Rubber Division, A.C.S., held on October 9th, at the Building Trades Club, 2 Park Avenue, New York City.

After the usual dinner, Dr. Miscall (Flintkote) made a motion, which was passed, authorizing the presiding chairman to appoint the nominating committee to select officers and the executive committee for the 1937 season. Accordingly, Chairman R. D. Gartrell, a short while later, announced that the Nominating Committee would consist of Carl Wright (General Atlas) as chairman, and the following members: Bruce Silver (N. J. Zinc), Dr. A. R. Kemp (Bell Labs.), W. L. Sturtevant (Manhattan Rubber), and J. P. Coe (Naugatuck Chemical). Chairman Gartrell also announced that the annual Christmas party would be held on Friday, December 18th, this year, with all arrangements in the hands of a committee comprising L. A. Edland (Vanderbilt), P. Murawski (du Pont), and W. O. Hammister (Nauagtuck Chemical).

Talks on Synthetic Rubber

The first speaker of the evening was V. A. Cosler, Rubber Chemicals Division, E. I. du Pont de Nemours and Company, Inc., Wilmington, Del., who delivered a paper on the "Commercial Application of Chloroprene and Butadiene Rubber." He treated the subject from the economic rather than the technical side and drew comparisons in the commercialization steps taken by the manufacturers involved on both types of rubber, DuPrene being of the chlororubber type and Buna (Germany) and Sovprene (Russia) being based on butadiene.

Mr. Cosler reviewed the history of the butadiene rubbers, especially the types produced in Germany, mentioning the impetus given their development during the World War, their subsequent lapse and then the recurrence of development due, for the most part, to the inauguration of new political dynasties which are striving to make the respective countries self-sustaining to a large degree. He stressed the point that the literature made available by German government officials with repect to the qualities of Buna rubbers was not propaganda alone, but that insofar as du Pont chemists can determine some of these rubbers possess qualities superior in certain instances to the natural rubber. At present, production of Buna amounts to approximately 60 tons per month, according to the speaker, but with the completion of a new factory now under construction production is expected to be stepped up by 200 tons per month.

Referring to the Russian synthetic rubber, Sovprene, also based on butadiene, Mr. Cosler stated that it was definitely inferior to Buna N, one of the three German types, or to the chloroprene rubbers, although admitting that very little was actually known about the physical properties of the material. He stated, however, that from a production standpoint the known butadiene rubbers were more costly than the chloroprene rubbers.

Concluding his paper, the speaker showed a number of slides of products being made entirely or partially of DuPrene, including accessories used in the automotive, printing, airplane, railroad, and other industries.

The second speaker was Mr. D. A. Shirk, of the Rare Metal Products Company, Belleville, N. J., who illustrated a talk on "Highlights of Travel in the Orient" with a series of colored slides made from photographs he had taken on one of his recent trips. One of the most widely traveled members of the rubber industry, Mr. Shirk's talk was well received. Constantly referring to the colored slides, he discussed the beauties of Cambodia, particularly the territory around Angkor which is steeped in tradition and mysticism, as well as the Isle of Bali and parts of India, including Delhi and Bombay. Members agreed that this meeting was highly educational and entertaining.

Colored Tires Again

One of the automotive columnists, in discussing the fact that Chrysler will furnish colored rubber running boards to match car bodies, raised the question of "how soon for colored tires." Tire officials have commented on the point that colored tires of various hues were perfected several years ago, with the negligible demand causing their removal from the market. Such tires are generally desired only on custom-built cars or extreme sports models and the limited demand does not justify their production. Practically all tires today are made with black sidewalls.

CHICAGO GROUP PLANS LADIES' NITE PROGRAM

The Chicago Group, Rubber Division, A.C.S., has arranged a special Ladies' Nite program for Friday evening, October 16th, at the New College Inn of the Hotel Sherman, in Chicago. No technical program will be presented, the entire evening being turned over to social festivities in order that members and friends of the Group may become better acquainted.

Dancing and entertainment will be the features of the special program, Roger Pryor, the screen and stage star, being the main attraction. In view of the entertainment program arranged, and the excellent facilities of the New College Inn, conceded to be one of the most lavish nite clubs in America, a large turn-out is expected.

LOS ANGELES GROUP RENEWS MEETINGS

The Los Angeles Group, Rubber Division, A.C.S., held its first monthly supper meeting of the fall and winter season in the Chinese Room of the Los Angeles Athletic Club, the regular place of meeting, on Tuesday evening, October 6, with 90 members and guests present.

The two main speakers on the program following the supper were J. H. Hansen, head "G" man of the Los Angeles area for the Federal Bureau of Investigation, and H. Perlish, vice-president of the Charles T. Wilson Company, of New York City.

Mr. Hansen explained briefly the methods of investigation of crime in his department and related in detail the story of the round-up of a group involved in a recent kidnapping. He answered several questions relative to his work and asked for co-operation from the laymen in the matter of clues and "tip-offs" whenever such are incidentally available.

Discusses Crude Rubber Status

Mr. Perlish, in Los Angeles on a business trip, spoke at some length on crude rubber production in the Orient and dwelt especially on the value to date of restriction. He emphasized the fact that restricted production did improve the market price and bring on the whole a larger profit to producers without jeopardizing consumption in America. "To date," said Mr. Perlish, "higher prices for crude rubber have not beaten down consumption and have not increased the relative percentage of reclaimed rubber being used. On the contrary, with rising prices the relative percentage of reclaimed rubber used in America has dropped to approximately 20% from a one time high of 51%.

"I sense one danger, however," said Mr. Perlish, "and that is the danger of greed now that it seems clear that restriction does increase market prices. A season of sky-rocketing prices induced by ultra-restriction would of course re-act boomerang fashion and paralyze the market. We hope that lessons of the past will prevent that from being brought about again. My own feeling is that under present conditions, with restriction cutting production to say 60%, about 8½ pence would be a fair price, advantageous to all."

J. W. McGrath, former member of the Los Angeles group, now manager of the Technical Service Division of Goodyear's Australian plant, was introduced and spoke briefly. The membership committee reported 16 new members admitted during the summer and they were introduced to the audience. A nominating committee was appointed and a purse of $18 was raised to put the Group's treasury in good shape. Moving pictures of a fishing trip off the Mexican coast on July 26 were shown. These pictures were taken by Ed Royal of the H. M. Royal Company.

The door prize, a beautiful soda siphon, donated by the L. H. Butcher

Company of Los Angeles, was won by D. E. Bell, plant manager for the Erwin E. Miller Company, Fullerton, California. A box of cigars, presented by the D. and M. Machine Company of Torrance, California, was won by Carl E. Stentz of the E. M. Smith Company, Los Angeles. As table favors, a rubber bath mat was presented by T. Kirk Hill of the Kirkhill Rubber Company to each person present.

The next meeting will be held on Wednesday, November 4, in place of the regular meeting night, Tuesday, November 3, which is Election Day.

RHODE ISLAND CLUB HOLDS FALL MEETING

Over 100 members and guests attended the Fall meeting of the Rhode Island Rubber Club, held at the Pawtucket Golf Club, Pawtucket, R. I., on September 25th. As usual, a golf tournament was held in the afternoon, with fifty-two players participating.

Prizes in the various events were awarded to the following: Low Gross—members: R. S. Newell, J. M. Marshall, Jr., J. H. Davidson, R. Cowan and L. T. Wilson; Low Gross—Guests: Mr. Bainbridge, L. Yates, E. B. Curtis, Mr. Salaman and Mr. Watt; Low Net—R. Edson, K. N. Bolton, C. Whatnough, W. Ahlman and J. H. Douglas; Blind Bogey—J. T. Murry, George Fowles, H. Innerman, F. J. Gradi and Fred Tetzlaff; Driving—W. H. Morley, C. Morton, W. C. Weller, H. E. Thompson and Al Bruce; Putting—E. T. Bosworth, F. Fitzpatrick, Mr. Clayton, F. E. Rupert and S. H. Tinsley. L. D. Walker, of Collyer Insulated Wire, acted as prize commissioner.

Rubber Age Cups Awarded

Immediately after an excellent dinner was served in the club house, presentation of the golf trophies donated by THE RUBBER AGE was made by Peter P. Pinto to the team representing the Anaconda Wire and Cable Company, club champions of the season, and to James Reek, also of Anaconda, for the season's individual low net.

The speaker of the evening was J. Haddon Davidson, sales engineer of the Farrel-Birmingham Company, who discussed "Transmission as Related to the Rubber Industry." Mr. Davidson reviewed the progress made by power transmission in the rubber industry from the days when the first water wheel was installed in the factory of the Samuel J. Lewis Company at Naugatuck, sometime around 1844. He followed its progress through the installation of the first electric motor for the operation of rubber mills in 1899; the introduction of cut spur enclosed drives in 1902; the development of enclosed gear cases with bearings built as part of the cases around 1909; the innovation of the Sykes gear about 1923; tracing it down to the present day. He pointed out, however, that there are certain places where chain drives are still in use for the reason that they are more practical than enclosed drives, and also stated that worm drives will continue to occupy a niche in the rubber industry.

Cups awarded by THE RUBBER AGE for the Rhode Island Club's golf tournament.

In concluding, Mr. Davidson gave full credit to the chemical engineers for the indirect improvement in transmissions for the operation of rubber equipment by virtue of constant improvement in all types of rubber products. (The complete paper appears elsewhere in this issue).

Following Mr. Davidson's talk, a motion picture showing the old and new methods of manufacturing shellac was presented by William Zinsser and Company, of New York City. Messrs. Clayton and Gerdts, of the Zinsser concern, answered questions at the conclusion of the film on the uses of shellac in rubber compounds.

The following firms contributed cash or prizes for distribution to the winners of the various events at this meeting: Anaconda Sales Co., Columbia Alkali Corp., E. I. du Pont de Nemours & Co., Inc., Flintkote Corp., Halowax Corp., *India Rubber World*, H. Muehlstein & Co., Naugatuck Chemical, New England Paper Tube Co., Pequanoc Rubber Co., Philipp Brothers, Inc., Rubber Service Laboratories, Southeastern Clay Co., R. T. Vanderbilt Co., L. G. Whittemore, Inc., and Wishnick-Tumpeer, Inc.

RUBBER EMPLOYMENT EQUALS 1929 MARK

Fully as many people are currently employed in the rubber industry as were employed in the boom year of 1929, according to a comprehensive survey of the present employment situation recently completed by the *New York Sun*. The survey, which required 21 weeks to complete, covered employment in the manufacturing, mechanical, mineral and transportation industries, among others. It indicates that approximately 25,600,000 persons are employed in the industries covered, with approximately 3,593,000 skilled workers still unemployed.

According to the survey, there were 129,285 persons employed in the rubber industry during 1935 as compared with 137,557 employed in 1929 or, in other words, 94 per cent of the 1929 total. However, because of the general improvement in business conditions which is apparent this year, that percentage should be materially increased and possibly more people employed in the rubber industry than in 1929. The survey was based on reports received from thousands of manufacturers throughout the country.

COMPLETE NEW PLAN FOR ESSEX RUBBER

With the receipt of a $250,000 loan from the Reconstruction Finance Corporation, a reorganization plan for the Essex Rubber Company, Trenton, N. J., has been completed and approved by the Federal Court. All debts are said to have been paid with officials reporting that the company is now in excellent shape. Approximately 475 persons are currently employed and business is said to be increasing rapidly.

The Essex Rubber Company went into receivership in July, 1931, and has been operated since that time by Harold S. Maddock, who was appointed receiver by Federal Judge Forman. Mr. Maddock remained in full charge of Essex activities until March 14th of this year when a petition for reorganization under the Federal Bankruptcy Act was filed in the courts. Joseph F. O'Shaughnessy, president of Essex, and Mr. Maddock, were recently named trustees by Judge Forman and are currently functioning in that capacity.

Oak Hill Rubber Sued

Suit was filed in the Common Pleas Court at Jackson, Ohio, last month, by William A. Byrider, Jr., seeking a judgment of $39,000, plus interest from January, 1926, against the Oak Hill Rubber Company, Oak Hill, Ohio. It also seeks foreclosure of a mortgage and sale of the company's property and assets. The plaintiff asks for judgment on eight notes delivered to his father in 1926 by the company and which were endorsed over to him in January of the current year. The mortgage involved is one given to the holder of the notes on real estate and equipment as security. In addition to Oak Hill, several of its executives are also named in the complaint. According to reports, the suit is intended to wrest control of the company from the present management.

1936 Service Show Set

The 1936 Automotive Service Industries Show will be held on Navy Pier, Chicago, December 9 to 13, sponsored by the Joint Show Operating Committee, representing the National Standard Parts Association, the Motor and Equipment Wholesalers Association and the Motor and Equipment Manufacturers Association. A total of 922 booths has already been contracted.

Names in the News

DR. FOSTER D. SNELL, president, Foster D. Snell, Inc., Brooklyn, N. Y., discussed "Some Factors in Detergency" before members of the American Association of Textile Technologists, at a meeting held on October 7th at the Hotel Wolcott, in New York City.

DR. J. C. PATRICK, chief chemist, Thiokol Corporation, Yardville, N. J., has an interesting article on the "Future of Synthetic Rubber Plastic Molding" in the October Handbook issue of *Modern Plastics*.

J. RALPH DUNLAP, head of the Dunlap Rubber Company, Akron, Ohio, was elected vice-president of the Akron alumni of Beta Theta Pi at a meeting of the fraternity held at Young's Hotel, in Akron, on September 28.

PROFESSOR GEORGE C. A. HANTELMAN, head of Goodyear Industrial University's speech department for seven years, resigned from that post recently to open speech classes for business men and to engage in lecturing. To date his post has not been filled at the Goodyear University.

A. L. FREEDLANDER, president and general manager, Dayton Rubber Manufacturing Company, Dayton, Ohio, has been re-appointed associate general chairman of the membership campaign conducted annually by the Dayton Y.M.C.A.

W. H. PESOLA, formerly associated with the research activities of the Vita-Var Corporation, Newark, N. J., was recently appointed head of the new research laboratory of the Imperial Oil & Gas Products Company, Pittsburgh, Pa.

JOHN M. SNELL, formerly with the Naugatuck Chemical division of U. S. Rubber Products Company, Inc., has accepted a position as research chemist with the Niagara Sprayer and Chemical Company, Middleport, N. Y.

WILLIS F. AVERY, in charge of chemical and compounding cases in the legal department of the B. F. Goodrich Company, Akron, for the past 12 years, has been elected assistant secretary of the company in charge of patent, trade-mark and copyright work. He fills the post left vacant by WILLARD D. EAKIN who resigned recently to engaged in the general practice of patent and trade-mark law.

L. H. LEY, traffic manager, Kelly-Springfield Tire Company, Cumberland, Maryland, attended the 33rd meeting of the Allegheny Regional Advisory Board, composed of members interested in rail transportation facilities, held in Canton, Ohio, last month, in his capacity as vice-chairman of the executive committee.

DR. H. H. HARKINS, Development Department, and O. S. TRUE, manager, Chemical Industries Tank Lining Sales, U. S. Rubber Products, Inc., are scheduled as the chief speakers at a meeting to be held on November 9th by the Hartford Branch of the American Electroplaters' Society, at the State Trade School, Hartford, Conn. The meeting will be devoted to the subject of rubber as applied to the plating industry.

G. J. IRWIN, formerly assistant engineer of tests, Bureau of Tests, Ohio Department of Highways, has joined the machine and process development departments of the B. F. Goodrich Company, Akron. He will be in charge of the Goodrich highway products engineering activities, especially new expansion joints and bridge materials.

THOMAS MIDGLEY, JR., of the Midgley Foundation and vice-president of the Ethyl Gasoline Corporation, has been named to receive the William H. Perkins Medal for 1937 "for distinguished work in applied chemistry." Presentation of the medal will be made on January 8, 1937, at a joint meeting of the American Chemical Society and the American Section of the Society of Chemical Industry.

EARL V. CARTER, passenger traffic manager, B. F. Goodrich Company, Akron, was named to the office of Illustrious Grand Master of Ohio by the Grand Council of Royal and Select Masters, a Masonic order, on September 16. He has been prominent in the order for a number of years.

S. T. CAMPBELL, formerly president of the Aetna Rubber Company, Cleveland, Ohio, was elected first vice-president, general manager and a director of the Faultless Rubber Company, Ashland, Ohio, at the annual meeting of Faultless directors held on September 25th. T. W. MILLER and W. H. BLACH remain chairman of the board and president, respectively, of Faultless Rubber.

BRUCE BEDFORD, president, Luzerne Rubber Company, Trenton, N. J., has been named general chairman of the Trenton Community Chest campaign.

A. R. BRADLEY, former personnel supervisor for the Goodyear Tire and Rubber Company, Akron, has joined THOMAS G. PROTHEROE in establishing an employment bureau for technical men and engineers, with offices in the Swetland Building, Cleveland.

DAVID R. CUTLER, development manager, Rubber-Gel Products Corp., North Quincy, Mass., was married on September 12th to MISS PATIENCE BREWSTER WIDGER. They will maintain their home in Braintree, Mass.

Hoadley Joins Atwood Co.

Franklin R. Hoadley, vice-president of the Farrel-Birmingham Company, Inc., Ansonia, Conn., has resigned after 22 years with the company, to become president of the Atwood Machine Company, Stonington, Conn. Mr. Hoadley, son of the late Frank E. Hoadley who for many years was secretary of the company until two years before his death in 1922, joined Farrel-Birmingham after his graduation from Yale in 1914. He was elected secretary and a member of the executive committee in 1930. Mr. Hoadley will continue his duties with the Ansonia company until January 1, when he becomes executive head of the Atwood company. The latter concern manufactures silk and rayon machinery. In announcing his impending resignation, Mr. Hoadley said he could not leave "without the deepest regret." He pointed out that his father started with Farrel-Birmingham in 1870 and "between us we have worked here for sixty-six consecutive years."

Denzler Joins Vultex Co.

E. O. Denzler, noted chemist, has joined the research and development staff of the Vultex Chemical Company, Cambridge, Mass. He is a graduate of the Philadelphia College of Science where he specialized in chemistry. His experience covers four years with the Standard Oil Company of New York as plant chemist; two years with the Bureau of Mines of Cornell University; fifteen years with the Seamless Rubber Company as chief chemist and assistant superintendent; and two years with the Faultless Rubber Company, specializing in dipped goods. Mr. Denzler is a member of the American Chemical Society. He is also a member of the American Legion.

E. A. VAN VALKENBURGH recently joined the laboratories of Foster D. Snell, Inc., Brooklyn, N. Y., as a special consultant on rubber problems. The company is currently conducting a drive to attract more business from the rubber industry and is said to be well-equipped for such activity.

CLIFTON SLUSSER, vice-president and factory manager of Goodyear, received his 25-year service pin from President P. W. Litchfield, on October 12. He started as a stenographer in 1911.

H. L. BERGER, of the Dayton Rubber Manufacturing Company, Dayton, Ohio, has been placed in charge of sales of the Dayton Cog-Belt Company, which operates out of Philadelphia.

A. C. SPRAGUE, employment manager, B. F. Goodrich Company, Akron, headed the list of employes eligible for 20-year service pins last month. He will receive his pin from President JAMES D. TEW at the semi-annual ceremonial to be held in December.

Financial News

GOODYEAR PROPOSES TO ADJUST ARREARS

A plan designed to eliminate accrued dividends on its $7 first preferred stock and to make possible the resumption of dividend payments when current earnings and surplus permit, has been proposed by the directors of the Goodyear Tire and Rubber Company, Akron. On October 1st dividend arrears on this stock amounted to $11.25 per share.

The plan is three-fold, as follows: (1) creation of a new issue of $5 convertible preferred stock senior to present first preferred as to dividends and assets, convertible until October 1, 1946, into common stock at varying rates, starting with the rate of three shares of common stock for one share of new preferred; (2) exchange of one share of $5 convertible preferred stock and one-third of a share of common stock for each share of existing first preferred stock, with total dividends payable on the new stock during 1936 amounting to $4.25 per share; and (3) change of the name of the existing first preferred stock to second preferred stock.

According to P. W. Litchfield, Goodyear president, the plan would not only adjust the accumulated dividends of $11.25 per share, but would also modify the high dividend rate of the first preferred stock and, at the same time, recognize the rights of the respective classes of stock and strengthen the capital structure of the company.

Litchfield Lists Advantages

Advantages of the plan, as explained by Mr. Litchfield, would include the following: holders of first preferred stock would receive share for share the new $5 convertible stock, which carries conversion rights and accumulated dividends from February 26, 1936, in addition to receiving one-third of a share of common stock; common stockholders may expect early resumption of dividend payments on their stock by the removing of formidable barriers including the accumulated dividends now existing and the permanent lowering of the dividend rate on the senior stock issue; and finally, Goodyear would have an improved capital structure of benefit to both common and preferred stockholders.

Goodyear has already notified the New York Stock Exchange that it proposes to increase its authorized capital stock by 1,000,000 shares of serial preferred stock of no par value, the initial series to consist of 782,418 shares of $5 convertible, as well as to decrease by 996,408 shares the 7% cumulative preferred and change the name of the present authorized first preferred stock to second preferred stock.

Holders of both Goodyear preferred and common stock are said to be readily assenting to the plan which will come up for approval at a meeting to be held in Akron on November 2. To become operative, the plan requires approval from the holders of at least three-fourths of the first preferred stock and two-thirds of the common stock.

Dayton 10-Month Report

For the 10 months ended August 31, 1936, the Dayton Rubber Manufacturing Company, Dayton, Ohio, reports a net income, subject to audit, of $357,337 after Federal income taxes, interest, depreciation, and other charges, but before provision for the surtax on undistributed profits. The 10-month profit was equal to $1.76 a share on 156,413 common shares after dividend requirements on $2 Class A preferred stock. In the corresponding period of the previous year, net income amounted to $49,798, or $1.07 a share on 46,518 shares of preferred stock. Income for the month of August, prior to provision of the surtax on undistributed profits, amounted to $65,720, compared with $6,327 in August, 1935.

Firestone Defers Dividend

Stating that the action was being taken as a result of the Federal surtax on undistributed profits, directors of the Firestone Tire and Rubber Company, Akron, at a meeting held on September 18th, deferred action on the common dividend due at that time until the next fiscal year which ends on October 31. Consequently, no tax will be levied on undivided profits for the current year. The action, according to a statement issued by the directors, was available to them "under the provisions of the 1936 Federal revenue act on account of the company's fiscal year closing October 31."

Lee Sales Increasing

For the three months ended July 31, 1936, the Lee Tire and Rubber Corporation, Conshohocken, Pennsylvania, reports sales of $3,119,938, a 48% increase over sales of $2,100,153 in the same period last year. Sales for the nine months ended July 31, 1936, amounted to $7,220,366 which compares with $5,805,647 in the corresponding period of the previous year, a 24% gain.

Faultless Profit Drops

For the year ended June 30, 1936, the Faultless Rubber Company, Ashland, Ohio, reports a net profit of $127,134 after depreciation, Federal income taxes and other charges, equal to $1.94 a share on 65,450 no-par capital shares. In the previous year Faultless earned $164,168, or $2.50 per share.

THERMOID PLAN WINS OFFICIAL APPROVAL

The plan of recapitalization recently proposed by directors of the Thermoid Company, Trenton, N. J., received official approval on September 25 when, at a special meeting, 65 per cent of the common stockholders and 80 per cent of the preferred stockholders voted favorably on it. The plan provides that the preferred share owners are to receive one and one-third shares of new convertible preferred stock and four shares of common stock for each 7 per cent preferred share and dividend arrears now held. The new preferred stock, having a $10 par value, will be redeemable at $55 per share.

All dividend arrears on the preferred stock of past sinking fund obligations have been cleared up by adoption of the recapitalization program which clears the way for Thermoid directors to pay a dividend on the new stock. A first dividend, of approximately 75 cents a share, will be declared shortly, payable on December 15th. There are 30,417 shares of 7% preferred and 255,971 common shares of $1 par now outstanding.

Fred Schluter, president of Thermoid, stated at the special meeting that business and profits were both on the upgrade.

Tire Dealers to Meet

The National Association of Independent Tire Dealers will hold its 16th annual convention at the Hotel Statler, in St. Louis, Missouri, from October 19 to 22, inclusive. The meetings will be conducted in conjunction with a trade exhibition of tires and equipment. Ten major subjects will receive consideration at the meetings including the Robinson-Patman Act, company-owned stores, fair trade rules and preferential prices extended to oil companies.

Another Price Rise Rumored

According to report, a group of leading tire manufacturers have been holding closed sessions recently under the auspices of the Rubber Manufacturers Association to discuss the possibilities of another tire price rise. In the past commercial accounts have been granted a 12½% discount from list prices and so-called national accounts received a 22½% discount. It is said that an effort is being made to place them both on the 12½% level.

Vultex Building Addition

Construction has been started on an addition to the Cambridge, Mass., plant of the Vultex Chemical Company which will increase the present manufacturing and storage facilities by approximately 50%. Plans also call for doubling the laboratory facilities. The expansion program is said to have been necessary because of the increased demand for Vultex.

NEW ENGLAND NEWS

United States Rubber Products, Inc., Naugatuck, Conn., has been awarded government contracts to furnish 2,000 pairs of rubber boots and 8,000 pairs of overshoes for the Civilian Conservation Corps. The company will receive $5,880 for the boots and $6,840 for the overshoes.

Two hundred employes of the shoe fitting and cutting departments of the U. S. Rubber Naugatuck footwear plants held their annual clambake and outing September 18 at the Naugatuck Fish & Game Club, Straitsville. On the same day, the Foremen's Association of the Bristol Company, Waterbury, held its annual outing.

Baseball production of the A. J. Reach Company, associated with A. G. Spalding & Bros., has been transferred from Philadelphia, Pa., to the Spalding plants in Chicopee and Willimansett, Mass. About 500 hands have been employed in the Philadelphia plant, which will be closed. A warehouse will be maintained in the Quaker City.

American Cyanamid and Chemical Corp. is making extensive alterations in its newly-acquired factory building on the Boston Post Road in Stamford, which is being used largely for laboratory purposes. A new entrance lobby and new lavatories are being built. Tile flooring, stair railings and ornamental iron work are included in the plans.

Wage workers of the Shoe Hardware Company, Waterbury, Conn., subsidiary of United States Rubber Co., will be given a week's vacation with pay, beginning in 1937, according to C. T. Manville, general manager. Vacation pay will be equal to 2 per cent of earnings for the 12 months preceding June 1, 1937.

Wheeler Insulated Wire Company, Bridgeport, Conn., has received permission from the Bridgeport Board of Zoning Appeals to erect an addition to its plant on Golden Hill Street.

Raybestos-Manhattan, Inc., Bridgeport, Conn., is maintaining heavy production schedules and its financial position is declared strong in current analyses. Approximately 50 per cent of its sales are derived from other than automotive sources, although it is best known for its automotive products.

Damage estimated at approximately $500 was caused October 5 when static electricity ignited gasoline fumes in a mixing shed of the Seamless Rubber Company plant on Hallock avenue, New Haven, Conn. A number of windows in the one-story brick building were knocked out by the explosion.

Russell Mfg. Company, Middletown, Conn., reports increasing production volume following rearrangement of its plant. More and more looms are being put into service in the webbing departments, with suspender web and garter web divisions operating at a good level. The company's automotive departments are also showing good progress. The work of plant rearrangement is expected to be completed October 15.

J. & W. Jolly, Inc., Holyoke, Mass., builder of special machinery and parts for rubber manufacturers and other industries, is running its foundry six days a week and maintaining full-time operations in its machine shop. Increased spending for plant improvements by manufacturers in the several industrial fields covered accounts for the increased activity at the Holyoke plant.

The Golf Association of United States Rubber Products, Inc., Naugatuck, Conn., held its fourth annual dinner October 2 in Hall's Tavern, Naugatuck, marking the close of the 1936 season. The Goodyear Glove trophy for the Labor Day handicap tournament was awarded to Howard Eggly. Walter H. Norton, factory manager, was among the other winners.

Close Polish Tire Contract

According to the terms of a recently signed contract, the General Tire and Rubber Company, Akron, will supervise the manufacture of all tires produced by the Stomil, S.A., the only automobile tire manufacturer in Poland. The Stomil concern has been in operation approximately 11 years and produces an average of 300 tires daily. Headed by Dr. Jan Piotrowski, the company furnishes the majority of tires purchased by the Polish government for both the civil and military units. It also produces bicycle tires and automotive accessories. A corps of General Tire engineers is scheduled to leave Akron late this month for the Stomil plant, which is located in Poznan, and will remain for an indefinite period. It is expected that a part of the Akron company's staff will soon be transferred to Poland permanently.

Change Marbro Products Name

The name of the Marbro Products Company has been changed to the Marbon Corporation. Offices and production facilities remain at 469 East Ohio Street, in Chicago. Dr. H. A. Winkelmann has been conducting a series of experiments for the company over a period of years and is expected to reveal some of his findings in a talk scheduled to be made at a meeting of the Akron Rubber Group in the early future.

Form Bartrum Rubber Co.

The Bartrum Rubber Company, of Barberton, was incorporated at Columbus, Ohio, last month, for 250 shares of no par value stock. Incorporators included Sol Israel, L. K. Evans and Alexander Mace. Jacob S. Baruch, attorney, handled the details of incorporation. According to Mr. Baruch the new company has not yet leased offices or factory space and he declined to name the type of products to be manufactured.

TRENTON NEWS

Following a visit and an address to a group of tire dealers in and about Trenton made by George Burger, secretary and general manager of the National Association of Independent Tire Dealers, the Independent Tire Dealers Association of Trenton was organized last month. At its first meeting the following officers were elected: George Yosco, president; Samuel Fineberg, vice-president; and Daniel Volk, secretary-treasurer. The new association immediately went on record as opposing automobile manufacturers providing a spare tire on delivered cars. The Robinson-Patman Act, and its effect on retail tire sales, was also discussed at the meeting.

Hillside Rubber Company, of Newark, N. J., has filed a certificate of incorporation at Trenton calling for a $125,000 capitalization. Incorporators included Nathan Geller, A. R. Rathbard and Belle Nussbaum, all of Newark. The new company intends to manufacture tires and tubes.

Ferodo and Asbestos, Inc., New Brunswick, N. J., will build an addition to its factory at a cost of $50,000. The company, which occupies a plant on a 20-acre plot, manufactures brake lining and other automotive accessories.

INTERNATIONAL PULP CO., *41 Park Row, New York, N.Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

NEW LABORATORY FOR COLUMBIAN CARBON CO.

Increasing demand for carbon black, which has now become the world's most important industrial colloid, has impelled the directors of the Columbian Carbon Company, New York City, to the decision to devote a whole four story brick building in New York to the intensive study of colloidal carbon. This will embrace not only problems in its manufacture but also in its application to rubber, ink, paint, paper, concrete, sulfur, synthetic resin plastics, gramophone records, radio resistors, dry and wet batteries, etc.

The new central laboratories are being equipped with the most modern testing apparatus, and will serve as a meeting place for the Columbian Carbon Company's customers from all parts of the world, where the many-sided applications of colloidal carbon can be fully dscussed with a staff of highly trained specialists. The new laboratories will be under the direction of Mr. W. B. Wiegand.

The company has for many years maintained a Fellowship at the Mellon Institute of Industrial Research in Pittsburgh in connection with carbon black research.

At Trenton, New Jersey, it maintains a laboratory for the purpose of dealing with iron oxides and the use of iron oxides in paint and rubber.

At Philadelphia, a subsidiary, the Frederick H. Levey Company, maintains a research laboratory for printing ink in which fifteen chemists are employed. One important product of this research laboratory is the Flashdri printing inks which dry instantaneously under heat upon the moving web in fast rotary printing. These inks are now in commercial use in the plant of the Curtis Publishing Company and other large printing establishments.

Control laboratories are also maintained in the field at Lefors and Wescar, Texas, and at Fairbanks, Louisiana.

Auto Show Opens Soon

The National Automobile Show, sponsored by the Automobile Manufacturers Association, opens on Armistice Day, November 11, at the Grand Central Palace, in New York City, and will continue through November 18. The show this year will remain open on Sunday. To date 24 makes of passenger cars, 7 makes of commercial vehicles and 13 types of trailers (cabin type) are scheduled to be exhibited, in addition to accessories and parts. Alfred Reeves, manager of the annual expositions, anticipates one of the largest functions yet held.

Lowman-Shields Buys Plant

A six-story building, located at 209 First Avenue, in Pittsburgh, Penna., has been purchased by the Lowman-Shields Rubber Company to serve as its permanent location.

Reaches 50,000,000th Mark

The Detroit, Michigan, factory of the U. S. Rubber Company turned out its 50,000,000th tire on September 25, 1936, marking a new milestone in production. This tire, a U. S. Royal Master, was the 120,000,000th produced by U. S. Rubber since the company built its first pneumatic tire for William Duryea in 1894. The illustration shows L. D. Tompkins, general manager of the tire division, and F. B. Davis, Jr., president of the company, inspecting the 50,000,000th tire on a de-skidding machine.

Waynway Rubber Moves

The Waynway Rubber Company, formerly located at 707 East 61st Street, Los Angeles, Calif., has moved to 2245 East 37th Street and has practically tripled its floor space as well as its equipment. Headed by Herbert N. Wayne, the company is now specializing in rubber parts for electro-therapy equipment and has greatly increased its line of latex products. Active as sales manager under the new set-up is Arthur N. Wayne, son of the proprietor, formerly western representative of A. Schrader's Son. Mr. Wayne reports business as good stating that the difficulty now, in contrast to a few years ago, is to keep production up to demand. Waynway Rubber also produces a general line of rubber appliances.

Rubber Quotas Unchanged

In a surprise move, the International Rubber Regulation Committee, meeting in London on September 29th, took no action on the rubber export quota from participating countries, leaving it unchanged at 65% of standard tonnages for the time being. Another meeting is scheduled for October 27th at which time the Committee could revoke its previous decision and raise or lower the quotas for the last quarter of the current year, but it is expected to leave them at the present 65% rate, announcing the quóta for the first quarter of 1937 only. No action was taken at the meeting on Ceylon's request for a higher basic quota. Celyon has requested a quota increase to 100,000 tons annually.

INCREASE OUTPUT OF RUBBER PRODUCTS

Gross value of products manufactured by the British rubber industry, the second largest in the world, amounted to £26,549,000 (approximately $132,745,000) in 1934, according to a recent report from American Assistant Trade Commissioner Warren S. Lockwood, of London. This amount was 9.6% greater than the total of £24,231,000 (approximately $121,155,000) reported for 1933. The average number of British workers employed in rubber factories of all kinds also showed an increase, according to the report, being 54,998 in 1934 as compared with 51,677 in 1933, an increase of 6.4%.

Some of the products manufactured in 1934 were listed as follows: 17,874,000 pneumatic tires; 16,120,000 inner tubes (6,116,000 auto tires and 4,700,000 auto tubes); 17,000 solids; 6,332 tons of machinery belting; 5,919 tons of packing, mats, matting, and tiling; 24,732,000 pairs of rubber footwear; 7,431 tons of heels and soles; 10,494,000 square yards of rubberized fabrics; 984,000 pairs of rubber gloves; 25,368,000 toy balloons; 2,820,000 hot-water bottles; 6,777 tons of miscellaneous mechanical goods; 3,191 tons of hard-rubber goods; 4,019 tons of rubber compounds and solutions; 1,579 tons of rubber substitutes; 7,588 tons of reclaimed rubber; 7,752,000 golf balls; 7,236,000 tennis balls; 10,380,000 other rubber balls; and 989 tons of rubber thread.

Latex from Brazil

Brazilian organizations are rapidly becoming interested in the possibility of shipping liquid latex to manufacturing companies, according to Assistant Commercial Attache A. W. Childs, stationed at Rio de Janeiro, with one company having already been formed to handle latex and dry rubber in the form of white crepe obtained by technical treatment of latex. As yet, exportation is decidedly limited, being restricted almost entirely to samples. Efforts are being made, however, to develop early markets.

Acme Rubber to Open

The plant of the Acme Rubber Company, Massillon, Ohio, successor to the former Hankins Rubber Company, will be opened in the early future as soon as remodeling is completed. The new company, which is headed by A. L. Lowenthal as president, expects to start operations later this month. Mr. Lowenthal formerly operated the Gold Glove Rubber Company in Massillon.

Open Baltimore Laboratory

Foster D. Snell, Inc., Brooklyn, N. Y., has announced the opening of a new laboratory branch at 215 N. Calvert Street, in Baltimore, Maryland. The branch will be under the direction of Theodore M. Miller and is equipped to carry on the same type of service rendered by the Brooklyn headquarters.

AUGUST CONSUMPTION WAS 3.1% UNDER JULY

Consumption of crude rubber by manufacturers in the United States for the month of August is estimated to be 46,657 long tons, which compares with 48,127 long tons for July. August consumption shows a decrease of approximately 3.1% under July, but is 20.3% above August a year ago, according to statistics released by the Rubber Manufacturers Association. Consumption for August, 1935, was 38,775 (revised) long tons.

Imports of crude rubber for August are reported to be 42,563 long tons, an increase of 18.7% over the July figure of 35,847 long tons, and 10.1% over the 38,655 long tons imported in August, 1935.

Total domestic stocks of crude rubber on hand August 31, are estimated at 229,056 long tons, which compares with July 31 stocks of 234,498 long tons and 334,106 (revised) long tons on hand August 31, 1935.

Crude rubber afloat to U. S. ports as of August 31 is estimated to be 63,597 long tons as compared with 60,343 long tons afloat on July 31 and 47,724 long tons afloat on August 31 a year ago.

August reclaimed rubber consumption is estimated at 10,993 long tons; production, 12,856 long tons; and stocks on hand, August 31, 23,750 long tons.

JULY TIRE SHIPMENTS SLIGHTLY BELOW JUNE

Shipments of pneumatic casings during the month of July are estimated at 5,743,863 units, a decrease of less than 1% under June, but 5.4% above shipments made in July, 1935, according to statistics released by the Rubber Manufacturers Association.

Production of pneumatic casings for July was estimated at 5,464,927 casings, a decrease of 2.6% under June but 54.7% above July, 1935.

Pneumatic casings in the hands of manufacturers, July 31, 1936, are estimated at 7,746,388 units, a decrease of 1.1% under the stocks on hand June 30, and 12.5% below stocks on hand July 31, 1935.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
July, 1936	5,743,863	5,464,927	7,746,388
June, 1936	5,792,319	5,609,789	7,832,911
July, 1935	5,447,109	3,531,834	8,849,503
July, 1934	4,157,411	3,352,836	9,436,816

Dayton Continues Expansion

Continuing a program of expansion, A. L. Freedlander, president and general manager of the Dayton Rubber Manufacturing Company, Dayton, Ohio, has announced the construction of a new warehouse which will cost approximately $50,000. The new structure will be of corrugated iron and concrete, and will add 50,000 square feet of space to Dayton's present facilities. A new addition to the building housing the fan belt division is also being considered, with a probable cost between $5,000 and $8,000 according to Mr. Freedlander. The company is at present running at full capacity.

Schulman Warehouse Burns

Akron's first general alarm fire in eighteen years, credited to spontaneous combustion, broke out on September 22nd, and completely destroyed one of the warehouses of A. Schulman and Company, at 577 South High Street. A coal warehouse adjoining the Schulman property was also wiped out, the combined loss amounting to approximately $185,000. Several firemen were overcome by the thick clouds of smoke raised by the burning rubber. The company has announced that there will be no interruption in service and that orders are being filled promptly from its other Akron warehouses and from East St. Louis.

Dunlop Acquires India Tyre

Following approval of common and preferred stockholders, the Dunlop Rubber Company, Ltd., Fort Dunlop, Birmingham, England, has acquired the complete business and property of the India Tyre and Rubber Company, of Inchinnan, Scotland. According to report, Dunlop paid approximately $1,131,000 for the Scottish company which is to be turned over to stockholders on a liquidation basis.

EXECUTIVES SELECTED FOR CASCADE RUBBER

W. G. Lerch, prominently identified with rubber manufacturing in Akron for many years, is to head the new Cascade Rubber Company at 2051 Water Street, Cuyahoga Falls, Ohio. P. C. Pearce, formerly of the India Tire Company, is secretary-treasurer, and Howard Cope, until recently with the General Tire & Rubber Company, will have charge of sales.

Mr. Lerch recently resigned as general factory superintendent of the Master Tire & Rubber Corporation, with plants at Philadelphia, Pa., Findlay, Ohio, and Cuyahoga Falls. Previous to joining the Master concern he was factory superintendent at India Tire. He perfected and patented the double cord breaker. After several years of litigation, India finally lost its suit against the Goodyear Tire & Rubber Company over the use of this patent.

Cascade Rubber will manufacture tire repair material, molded goods and mechanical rubber goods, Mr. Lerch said.

Issue Football Guide

General Atlas Carbon Company, New York City, has issued the "Grantland Rice Gastex Football Guide—1936." In addition to the schedules for the coming season of the larger schools and universities, the booklet also contains the scores of the previous season as well as a section devoted to the description of trick plays sponsored by leading coaches.

Obituaries

Theodore W. Bassett

Theodore W. Bassett, former president of the U. S. Rubber Reclaiming Company, died at his home in Rye, N. Y., on October 8th, at the age of 67. The son of Theodore Sheldon Bassett, one of the founders of the reclaiming concern who served as president until his death in 1908, the late Mr. Bassett became president of the company in 1909 and acted in that capacity until 1919 when he was succeeded by R. A. Low, although he retained the position of vice-president and director. He served on the directorate until his retirement from active business in 1932. In addition to his connection with U. S. Rubber Reclaiming, Mr. Bassett founded the Bassett Company, of Derby, Conn., and at one time was the owner of a rolling mill in Wyoming. His social activities included membership in the N. Y. Athletic Club. Mr. Bassett leaves a widow and a son.

William G. Bergen

William G. Bergen, retired rubber salesman who enjoyed a wide popularity in the rubber industry especially in Eastern circles, died at the Stacy Trent Hotel, Trenton, N. J., in which he had made his home for many years, on September 21, following a lengthy illness. For a number of years he was in the employ of the Home Rubber Company, Trenton. Born in Dutch Neck, N. J., the son of the late Sheriff S. W. Bergen of Mercer County, he lived in Trenton almost his complete lifetime, maintaining a home for a short period in Atlantic City where he owned some real estate holdings. Seventy-five years old at the time of his death, Mr. Bergen was a widower. Burial was in Riverview Cemetery, Trenton.

Frank Stoddard

Frank Stoddard, chief engineer of the Pocono Company, Trenton, N. J., died at his home on September 7 following a lengthy illness. He was 61 years of age. Included among his activities was membership in the Association of Power Engineers. He leaves a widow, two daughters and a son. Burial was held at Mount Holly, N. J.

New Rubber Goods

Supero Siameez Duplex Hose

Differing radically in construction from other types of rubber hose, Supero Siameez duplex hose has been intro-

duced by the Electric Hose & Rubber Company, Wilmington, Delaware. Especially designed for welding equipment and similar services, twin hose are simultaneously molded with a connecting web between them so that the cross-section resembles the figure 8. It is constructed with a special cord-wound reinforcement between the first and second braid so that with the ¼-inch size the burst is as high as 2,000 pounds. According to its manufacturer, Supero Siameez hose replaces equipment which heretofore has required two separate lengths.

Tool-Tap Trouble Lamp

Said to be the first really important trouble lamp development in several years, Eagle Electric Mfg., Inc., Brook-

lyn, N. Y., has developed the Tool-Tap Trouble Lamp which incorporates the use of a double outlet made of rubber. The rubber outlet is connected on the cable 2 inches below the handle and is convenient to use. The flexible cable is rubber-covered with a rubber grip cap being utilized as the handle for the main trouble lamp. The new style lamp is equipped with a heavy duty wire guard and a cadmium plate reflector.

U. S. Bumper Guard

The Motor Products Division of U. S. Rubber Products, Inc., New York City, has recently introduced a new type of bumper guard incorporating a semi-solid rubber cushion on its rear surface, the purpose of the cushion being to take the brunt of the wear absorbing minor shocks as well as to protect the chromium finish from scratching.

Great Seal Cord Belt

The Great Seal Cord Belt, made in endless construction, has been developed by the New York Belting and Packing Company, New York City. The cord plies are proportioned to minimize internal friction and are embedded in rubber to provide resistance to ply separation. The edges of the belt are cut square and are coated with rubber

cement. This coating and the rubber sealing between the plies, provides a wearing surface for operation of the belt between shifter fingers and against shoulders on step pulleys.

Bernard Lamp Base Extractor

A new tool designed for removing the brass shell of broken electric lamps from the socket, has been developed by the William Schollhorn Company, New Haven, Conn. Equipped with spring action handles, the user is safeguarded against electric shock by the use of rubber jackets over the handles as insulators. Pressure on the handles of this new type plier causes the pointed

jaws to open so that they "bite" into the inside surface of the base of the lamp to be removed. Overall length of the instrument is 6½ inches.

Seiberling Teeter-Totter

Introduced to the trade in time for the coming holiday season, the Seiberling Latex Products Company, Barberton, Ohio, is featuring the Seiberling

Teeter-Totter, a new type of pull-toy on which are mounted Walt Disney characters, i.e., Donald Duck and Mickey Mouse. The decorative molded rubber characters are removable so that they provide double play value to children. The pull toy is gaily decorated in several colors and is made completely of wood. The Donald Duck novelty straddles the center of the see-saw arrangement with a Mickey Mouse character, of black rubber, at either end. The Teeter-Totter is 16¾ inches long and comes equipped with a long handle.

Goodrich Hipress Air Hose

A new type of air hose, designed for all types of air tool applications, has been announced by the B. F. Goodrich

Company, Akron. Known as "Hipress," this hose is a combination structure made in long lengths, the inner carcass consisting of four plies of specially woven duck. The tube is made of oil- and heat-resisting rubber. Due to a bias design in the wrapped fabric of the inner carcass, any air or fluid which reaches it travels only a short distance before reaching the terminal point of the yarn, thus preventing penetration throughout the entire length of hose. Use of an outer braided carcass is said to give Hipress air hose greater flexibility and more secure adhesion of cover than is obtained with an all-wrapped construction. Made in 500 foot lengths, the new Goodrich hose is furnished in three sizes, ½-inch, ¾-inch and 1-inch.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, OCTOBER 9, 1936

Crude Rubber

STRENGTHENING of the statistical position of crude rubber continues to lead prices into new high levels for the current period. If rubber reaches the 1,000,000 ton consumption mark as expected, world stocks by the end of the year will be decreased by approximately 150,000 tons, bringing the total stock down to roughly 500,000 tons, or a six month supply. Since our last report prices climbed steadily until a few days prior to the meeting of the International Rubber Regulation Committee on September 29. The day before the meeting the price for spot on the Exchange broke 16 points, from 16.44 to 16.28. The decision of the Committee, however, to make no change in the quotas for the last quarter of the year brought the price back to 16.50 the following trading day. High for the period was 16.59 quoted on the Exchange on September 22nd; low was the 16.28 quotation on September 28th. Interest is now centered on what action the Restriction Committee will take for early 1937 at a meeting set for October 27th. Quotations in the outside market, Exchange, London and Singapore, follow:

As of October 9

Plantations—

Ribbed Smoked Sheets—			
No. 1 Spot	—	@	.16½
January-March	—	@	.16¾
April-June	—	@	.16⅞
No. 2	—	@	.16⅝
No. 3	—	@	.16⅜
No. 4	—	@	.16⅛
Thin Latex Crepe	—	@	.17⅛
Thick Latex Crepe	—	@	.17⅛
Brown Crepe, No. 1	—	@	.16⅝
Brown Crepe, No. 2	—	@	.16⅜
Amber Crepe, No. 2	—	@	.16⅝
Amber Crepe, No. 3	—	@	.16⅜
Amber Crepe, No. 4	—	@	.16¼
Brown Crepe, Rolled	—	@	.16

Latex—

Liquid Latex, per gal.	.61	@	.63

Paras—

Up-River, fine	—	@	.21
Acre Bolivian, fine	—	@	.21½

Balata—

Block, Ciudad	—	@	.32

LONDON MARKET

Standard Smoked Sheets—Buyers—October 9

January-March	—	@	7 15/32d
April-June	—	@	8d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—October 9

January-March	—	@	7 33/64d
April-June	—	@	7 17/32d

Reclaimed Rubber

Price increases on practically every grade of reclaim took effect since our last report. The reclaim market continues strong with crude rubber still hovering around a 16½ cent price and expected to go still higher shortly. Scrap supplies have tightened up considerably in the last several weeks. Reclaimers view the future with confidence. Current quotations follow:

High Tensile

Super-reclaim, black lb.	.09¼	@	.09½
High Tensile Red lb.	.08	@	.08¼

Shoe

Unwashed lb.	.06½	@	.06¾
Washed lb.	.08	@	.09

Tube

No. 1 (Floating) lb.	.16	@	.16¼
No. 2 (Compounded) lb.	.07¾	@	.08
Red tube lb.	.07¾	@	.08

Tires

Black lb.	.05	@	.05½
Black, selected tires lb.	.05⅜	@	.05⅝
Dark Gray lb.	.06¾	@	.07
White lb.	.11	@	.11¼
Truck, Heavy Gravity lb.	.05½	@	.06
Truck, Light Gravity lb.	.06	@	.06¼

Miscellaneous

Mechanical blends lb.	.03¾	@	.04½

Scrap Rubber

(Delivered Akron Mills)

The anticipated price rise occurred on several grades of scrap last month, including boots and shoes. Scrap rubber dealers report a strong market, with a consistent demand from reclaimers and a subsequent tightening up of available supplies. Slight price increases on all grades of scrap are looked for shortly. Current quotations follow:

(Prices to Consumers)

Auto tire peelings ton	15.00	@	16.00
Mixed auto ton	9.00	@	10.00
Beadless tires ton	13.50	@	15.00
Clean solid truck tires ton	26.50	@	28.00
Boots and shoes ton	17.50	@	20.00
Arctics, untrimmed ton	12.50	@	15.00
Inner tubes, No. 1 lb.	.09½	@	.10½
Inner tubes, No. 2 lb.	.04¼	@	.04⅜
Inner tubes, Red lb.	.04⅜	@	.04½

Cotton

Cotton prices were subject to fluctuation last month, high for the period being 12.63 on September 30th; low, 12.16 on September 21. Active stimulation of the market took place in this period by a boom in the gray goods market, buyers anticipating requirements through the first quarter of next year, with prices dropping again after the flurry subsided. Opinion is sharply divided as to the ultimate effect of the fluctuations and lack of stabilization in foreign exchanges. Many brokers express confidence that devaluation of foreign currency will lead to an international agreement on currencies which, in turn, will lead to a larger volume of international trade with increased cotton exports. There is also a strong impression in the market that expansion of credit, managed currencies and paper money means higher commodity prices. In the meantime, the unsettled European conditions have resulted in the export demand falling off somewhat. Quotations for middling uplands on the N. Y. Cotton Exchange follow:

	Sept. 10	October 9		
	Close	High	Low	Close
October	12.10	12.00	11.94	11.94
December	12.14	11.96	11.83	11.84
March	11.99	11.97	11.87	11.87

Tire Fabrics

(Prices Net at the Mill)

Peeler, carded, 23/5/3 lb.	.30	@	.30½
Peeler, carded, 23/4/3 lb.	.31	@	.31¼
Peeler, carded, 15/3/3 lb.	.28	@	.28½
Peeler, carded, 13/3/3 lb.	.27	@	.27½
Egyptian, carded, 23/5/3 lb	.44½	@	.45
Egyptian, combed, 23/5/3 lb.	.49	@	—
CHAFERS			
Carded, American, 1 1/16" lb.	.31	@	.33
Carded, American, 1" lb.	.27½	@	.30

Sheetings

48x40	36 in.	5.50 lb.	—	@	.05⅝
40x40	36 in.	6.15 lb.	—	@	.04⅞
40x36	36 in.	6.50 lb.	—	@	.04⅜
48x48	40 in.	2.50 lb.	—	@	.09⅞
48x48	40 in.	2.85 lb.	—	@	.08⅞
56x60	40 in.	3.60 lb.	—	@	.08¼
48x44	40 in.	3.75 lb.	—	@	.07⅜
44x40	40 in.	4.25 lb.	—	@	.06½

Ducks

Enameling (single filling) lb.	.27	@	.31
Belting and Hose lb.	.28	@	—
Single filling, A grade lb.	.12½	@	.14½
Double filling lb.	.13	@	.15

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM SEPTEMBER 11 TO OCTOBER 9

Date	Spot	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sales
Sept. 11	16.31	16.31	16.35	16.40	16.46	16.49	16.52	16.55	16.59	16.64	16.68	16.73	16.77	....	61
12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
14	16.44	16.35	16.40	16.45	16.50	16.53	16.57	16.61	16.65	16.69	16.73	16.77	16.81	....	68
15	16.47	16.43	16.43	16.46	16.51	16.55	16.59	16.63	16.66	16.70	16.75	16.81	16.85	....	81
16	16.56	16.50	16.53	16.57	16.61	16.63	16.66	16.69	16.74	16.80	16.83	16.87	16.91	....	135
17	16.50	16.47	16.49	16.54	16.60	16.62	16.65	16.68	16.73	16.78	16.83	16.87	16.91	....	137
18	16.50	16.48	16.48	16.53	16.58	16.61	16.65	16.69	16.72	16.76	16.80	16.85	16.90	....	105
19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
21	16.56	16.50	16.51	16.56	16.62	16.65	16.68	16.71	16.74	16.78	16.84	16.90	16.95	....	53
22	16.59	16.50	16.51	16.56	16.62	16.66	16.69	16.72	16.76	16.80	16.85	16.90	16.94	....	108
23	16.50	16.40	16.40	16.47	16.54	16.57	16.60	16.64	16.68	16.73	16.78	16.83	16.87	....	106
24	16.50	16.40	16.40	16.45	16.50	16.53	16.56	16.60	16.64	16.68	16.73	16.78	16.82	....	132
25	16.44	16.39	16.37	16.42	16.47	16.51	16.55	16.59	16.63	16.67	16.72	16.77	16.81	....	174
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
28	16.28	....	16.15	16.22	16.29	16.32	16.35	16.39	16.43	16.47	16.51	16.56	16.60	....	310
29	16.50	....	16.36	16.42	16.48	16.51	16.55	16.59	16.62	16.65	16.70	16.75	16.80	....	165
30	16.44	....	16.30	16.39	16.48	16.51	16.54	16.57	16.61	16.65	16.68	16.72	16.76	....	92
Oct. 1	16.34	....	16.25	16.32	16.40	16.43	16.47	16.51	16.54	16.57	16.61	16.65	16.68	16.72	58
2	16.40	....	16.33	16.38	16.44	16.47	16.51	16.55	16.59	16.64	16.67	16.70	16.73	16.77	50
3	16.47	....	16.35	16.41	16.48	16.51	16.54	16.57	16.62	16.67	16.70	16.74	16.77	16.81	20
4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
5	16.44	....	16.39	16.45	16.52	16.55	16.58	16.62	16.65	16.68	16.72	16.76	16.79	16.83	53
6	16.38	....	16.30	16.35	16.41	16.44	16.47	16.50	16.54	16.59	16.63	16.67	16.70	16.74	520
7	16.31	....	16.26	16.31	16.36	16.38	16.41	16.44	16.47	16.51	16.55	16.59	16.62	16.66	59
8	16.41	....	16.34	16.39	16.44	16.47	16.50	16.54	16.57	16.61	16.65	16.69	16.72	16.76	39
9	16.50	....	16.38	16.43	16.48	16.51	16.54	16.58	16.62	16.66	16.70	16.74	16.77	16.81	32
10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...

Rubber CHEMICAL Markets

NEW YORK, OCTOBER 13, 1936

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic			
A-1 (Thiocarbanilid)	lb.	.24 @	.28
A-5-10	lb.	.33 @	.36
A-7	lb.	.53 @	.65
A-11	lb.	.60 @	.75
A-16	lb.	.55 @	.65
A-19	lb.	.56 @	.75
A-32	lb.	.70 @	.80
A-77	lb.	— @	—
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	— @	—
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.44 @	.47
Diphenylguanidine	lb.	.35 @	.37
El-Sixty	lb.	.55 @	.65
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½ @	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lead Oleate, No. 999	lb.	.11 @	—
Witco	lb.	.11 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsolene	lb.	1.60 @	1.85
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.50 @	1.80
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.24 @	.28
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.62 @	1.00
Ureka B	lb.	.62 @	.75
Ureka C	lb.	.58 @	.69
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.48 @	.60
Zimate	lb.		
Inorganic			
Litharge, domestic	lb.	.06½ @	.07
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.37 @	.39
Ultramarine	lb.	.15 @	—
Browns			
Sienna, Italian	lb.	.06 @	'13
Umber, Turkey	lb	.04 @	.04½
Greens			
Chrome, light	lb.	.20 @	.30
medium	lb.	.21 @	.31
Chromium Oxide, bbl.	lb.	.19 @	.20
Guignet's Green	lb.	.70 @	—
Reds			
Antimony			
crimson, 15/17	lb.	.48 @	—
sulfur, free	lb.	.48 @	.60
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼ @	—
Whites			
Cryptone Cll, No. 21	lb.	.06 @	.06¼
Cryptone, No. 19	lb.	.06 @	.06¼
Cryptone, ZS-20	lb.	.10½ @	.10¾
Cryptone, ZS-86	lb.	.10½ @	.10¾
Lithopone			
Albalith, black label—11	lb.	.04½ @	.04¾
Azolith	lb.	.04½ @	.04¾
Rayox	lb.		
Titanium oxide	lb.	.17 @	.18½
Titanox B	lb.	.06 @	.06¼
Titanox C	lb.	.06 @	.06¼
Zinc Oxide—American Process			
American Azo			
ZZZ (lead free)	lb.	.05¼ @	.05½
Anaconda, lead free	lb.	.05¼ @	.05½
Horsehead Lead Free Brand:			
Special—3	lb.	.05¼ @	.05½
XX Red—4	lb.	.05¼ @	.05½
XX Red—72	lb.	.05¼ @	.05½
XX Red—78		.05¼ @	.05½
XX Red—103	lb.	.05¼ @	.05½
U. S. P.—7, bbls.	lb.	.05¼ @	.05½
Kadox, black label—15	lb.	.05¼ @	.05½
Blue label—16	lb.	.05¼ @	.05½
Red label—17	lb.	.05¼ @	.05½
St. Joe, black label	lb.	.05¼ @	.05½
green label	lb.	.05¼ @	.05½
red label	lb.	.05¼ @	.05½
Zinc Oxide—French Process			
Florence White seal—7 bbls.	lb.	.06¾ @	.07
Green seal—8	lb.	.06¼ @	.06½
Red seal—9	lb.	.05¾ @	.06
Yellows			
Chrome	lb.	.11 @	.12
Ocher, dom. med.	lb.	.02¾ @	—

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535 @	.0825
Bone, powdered	lb.	.05½ @	.12½
Carbon, compressed	lb.	.0535 @	.0825
uncompressed	lb.	.0535 @	.0825
"Certified," Cabot	lb.	.0535 @	.0825
Spherons	lb.	.0535 @	.0825
"Disperso"	lb.	.0535 @	.0825
Drop, bbls.	lb.	.05¼ @	.14
"Excello," compressed	lb.	.0535 @	.0825
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.07 @	.12
"Micronex"	lb.	.0535 @	.0825
"Supreme"	lb.	.0535 @	.0825
Thermatomic—"P 33"	lb.	— @	—
"Thermax"	lb.	— @	—
United "Dixie" & "Kosmos"	lb.	.0535 @	.0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½ @	.12
Asbestine	ton	13.00 @	15.00
Barium carbonate (98-100%)	ton	56.50 @	61.50
Barium Dust	lb.	.05 @	.06
Barytes	ton	23.65 @	31.15
Basofor	lb.	.04½ @	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	70.00 @	75.00
Calcene	ton	37.50 @	45.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	45.40 @	60.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	7.50 @	15.00
Aerfloted, Suprex	ton	8.50 @	10.00
Congaree	ton	9.00 @	—
Dixie	ton		
Dixie, Jr.	ton		
McNamee	ton		
Par	ton		
Tensulite		15.00 @	—
Witco	ton	8.50 @	9.00
Cotton Flock	lb.	.11 @	.15
Glues, extra white	lb.	.28 @	.30
medium white	lb.	.14 @	.19
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesium carbonate	lb.	.08 @	—
Mica	ton	35.00 @	—
Pyrax A	ton	— @	—
Rottenstone (powdered)	lb.	.02½ @	.05
Soapstone, powdered	ton	16.00 @	22.00
Starch, powdered	cwt.	3.19 @	3.39
Talc, domestic	ton	16.00 @	18.00
Whiting, commercial	ton	17.00 @	18.00
Columbia Filler	ton	9.00 @	14.00
English Cliffstone	ton	33.00 @	43.00
Sussex	ton		
Witco	ton	7.00 @	—
Wood Flour	ton	18.00 @	30.00
Zinc Carbonate	lb.	.10½ @	.11
Zinc Stearate	lb.	.26 @	—

MINERAL RUBBER

Black Diamond	ton	27.00 @	—
Genasco, solid (factory)	ton	25.00 @	27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton	31.00 @	—
Pioneer, MR, solid	ton		
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.80
Tonox	lb.	.56 @	.60

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	2.45 @	2.70
glacial, USP, bbls.	100 lb.	14.00 @	—
Nitric, 36 degrees	cwt.	5.00 @	6.00
Sulfuric, 66 degrees	ton	15.50 @	16.50
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08½ @	.11¾
Stearic, double pressed	lb.	.10 @	.11
Stearite	lb.	.09¼ @	.10½
Alkalies			
Caustic Soda, 76%	cwt.	3.60 @	3.75
Soda Ash, 58% C.L.	cwt.	2.52 @	—

Oils			
Corn, refined, bbls.	lb.	.11½ @	.11¾
Cottonseed, crude	gal.	.093 @	.10
Cycline Oil	gal.	.15 @	.28
Degras, bbls.	lb.	.05¼ @	.06¾
Fluxrite	lb.	.05½ @	.0b½
Palm Lagos	lb.	.05 @	—
Niger	lb.	.04¾ @	—
Para-Flux	gal.	.17 @	—
Petrolatum, light	lb.	.03½ @	.03¾
Pigmentaroil, tank cars	gal.	.16 @	—
in drums	gal.	.22 @	.23½
Pine, steam distilled	gal.	.64 @	.65
dest. dist., drums	gal.	.44 @	.46
Rosin Oil, cmpd	gal.	.40 @	—
Rubtack	lb.	.40 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	.05½ @	—
Witco Softener	gal.	.15 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Wobonite, c.l.	lb.	.05 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.03½ @	—
coal tar	gal.	.07½ @	.08
hardwood	ton	15.00 @	—
pine, 200 lb. gr. wt.	bbl.	4.00 @	4.50
Rosin, grade K, 280 lb.	bbl.	5.90 @	—
Pigmentar, tank cars	gal.	.19 @	—
in drums	gal.	.25 @	.27
R. S. L. Resin	lb.	— @	—
Retort Pine Tar, drums	bbl.	12.00 @	13.00
Solvents			
Acetone, pure	lb.	.08½ @	—
Alcohol, denatured, methanol, No. 1 bbls.	gal.	.28 @	.39
Benzene, 90%	gal.	.18 @	.23
Beta-Trichlorethane	gal.	— @	—
Bondogen	lb.	— @	—
Carbon, bisulfide	lb.	.05¼ @	.08
Carbon, tetrachloride	lb.	.05¾ @	—
Dichlorethylene	lb.	.29 @	—
Dipentene, cml., drums	gal.	.41 @	.44
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05½ @	.06½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.31 @	—
Plastogen	lb.		
Reogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Trichlorethylene	lb.	— @	.09½
Turpentine, spirits	gal.	.50 @	—
dest. dist., drums	gal.	.47 @	—
Waxes			
Beeswax, white	lb.	.34 @	.35
Carnauba, yellow	lb.	.45 @	.46½
Ceresin, white, dom.	lb.	.08 @	.11
Montan, crude	lb.	.10¾ @	.11¾
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03½ @	—
White crude scale 124/126	lb.	.03 @	—
Refined, 122/127	lb.	.04½ @	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
HP	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-H	lb.	.54 @	.65
Flectol White	lb.	.95 @	1.15
Flectol B	lb.	.54 @	.65
Neozone	lb.		
Oxynone	lb.	.66 @	.75
Perfectol	lb.	.67 @	.75
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

MOLD LUBRICANTS

Aresklene	lb.	— @	—
Cocoa Soapstock	lb.	.06 @	.08
Dipex	lb.	.06 @	.08
Laurex	lb.	.24 @	.30
Rusco, f.o.b. Nitro	lb.	.12 @	.30
Sericite, f.o.b. N. Y.	ton	65.00 @	—
Soap Tree Bark, cut, sifted	lb.	.06 @	.08
Zip (Mold Wash)	lb.	— @	—

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.26 @	—
Black	lb.	.08½ @	—
White	lb.	.08½ @	.13
Brown	lb.	.08 @	.14
Duphax	lb.	.11 @	—

VULCANIZING INGREDIENTS

Sulfur Chloride, yellow (drs.)	lb.	.03½ @	.04½
Sulfur flour,			
Refined, 100% pure (bags)	cwt.	2.55 @	3.15
Commercial (bags)	cwt.	1.60 @	2.35
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1934	449,322	97,898,519	9.73	23,848	5,770,109	11.23	425,615
1935	453,135	115,299,448	11.36	11,389	3,084,331	12.09	441,746
1934:							
Oct.	28,318	8,203,447	12.92	2,058	620,754	13.46	26,260
Nov.	36,325	10,470,076	12.87	1,230	327,672	11.89	35,095
Dec.	17,590	4,974,374	12.62	866	240,780	12.46	16,724
1935:							
Jan.	39,675	10,852,308	12.21	977	278,229	12.72	38,698
Feb.	47,271	12,291,242	11.61	1,845	480,440	11.62	45,426
March	45,350	11,801,152	11.62	1,868	486,379	11.62	43,482
April	39,735	10,096,487	11.34	1,096	285,903	11.64	38,639
May	29,278	7,171,025	10.98	793	202,402	11.39	28,485
June	31,240	7,523,598	10.75	524	153,595	13.10	30,716
July	46,987	11,666,577	11.08	489	132,173	12.06	46,498
August	40,249	10,419,056	11.56	476	130,464	12.23	39,773
Sept.	34,659	8,637,048	11.12	468	120,438	11.48	34,191
Oct.	35,091	8,742,222	11.12	651	188,518	12.92	34,440
Nov.	25,050	6,137,160	10.94	380	101,793	11.95	24,670
Dec.	38,417	9,930,710	11.54	1,821	523,997	12.85	36,596
1936:							
Jan.	32,255	8,624,060	11.94	732	229,129	13.98	31,523
Feb.	32,879	9,293,711	12.62	625	199,956	14.27	32,254
Mar.*	33,447	9,845,776	13.14	1,172	390,551	14.88	32,275
Apr.*	44,218	13,967,712	14.10	984	343,785	15.59	43,234
May*	35,578	11,460,157	14.38	1,589	580,021	16.30	33,989
June	36,376	12,073,632	14.82	2,469	904,669	16.35	33,907
July	38,178	12,763,200	14.92	1,383	510,075	16.47	36,795
Aug.	40,027	13,364,916	14.91	840	307,114	16.32	39,187

* Revised.
Note: Total 1935 figures (revised) subject to further revision.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule Tons	Guayule Dollars	Balata Tons	Balata Dollars	Jelutong Tons	Jelutong Dollars	Liquid Latex (1) Tons	Liquid Latex (1) Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1933	—	—	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1934	402	75,349	1,054	438,209	4,988	943,752	13,070	3,633,253
1935	468	86,835	626	188,384	5,747	1,063,126	13,553	3,782,222
1935:								
August	50	9,464	31	8,963	445	82,179	1,234	370,431
Sept.	18	3,245	29	6,090	1,682	407,418	1,048	291,652
Oct.	48	8,112	27	7,641	208	33,262	1,287	342,101
Nov.	70	11,931	39	11,706	269	50,657	1,023	261,668
Dec.	91	15,317	62	18,269	414	71,885	1,395	391,386
1936:								
Jan.	70	13,182	30	8,924	656	133,948	1,667	474,682
Feb.	75	14,127	100	34,389	396	84,635	1,459	406,985
Mar.	40	7,605	65	25,590	378	70,560	1,427	417,704
April	103	19,469	38	15,232	751	146,548	1,612	522,049
May	88	16,698	59	21,217	521	114,099	1,472	490,769
June	97	18,380	33	13,671	767	186,274	1,897	657,311
July	96	18,168	44	15,314	556	106,676	1,665	579,895
Aug.	146	37,147	72	23,715	321	64,769	1,761	602,992

(1) Weight given in pounds of dry rubber contained in latex.
Note: Total 1935 figures (revised) subject to further revision.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)
(All Quantities in Long Tons)

	1929	1930	1931	1932	1933	1934	1935	1936
Jan.	43,002	36,194	28,557	29,648	22,645*	39,190*	47,103	48,506
Feb.	41,594	33,302	28,797	31,821	21,392*	40,515*	43,187	36,746
Mar.	44,730	35,540	32,788	29,505	17,483*	47,003*	42,620	42,703
Apr.	47,521	39,686	33,321	27,518	25,928	44,853*	44,247*	51,897
May	49,233	39,386	37,817	30,957	44,074	42,918*	41,101*	50,482
June	43,227	34,195	37,916	41,475	50,743*	40,147*	36,156*	52,636
July	41,526	29,508	31,397	29,976	49,614*	32,553*	35,917*	48,127
Aug.	38,274	30,850	27,586	23,721	44,428*	33,216*	38,775*	46,657
Sept.	34,707	25,515	23,638	23,847	35,281*	30,258*	37,553	
Oct.	34,800	27,516	22,277	22,286	31,543*	31,253*	42,436	
Nov.	27,659	23,691	22,943	23,231	28,831*	34,748*	42,778	
Dec.	25,531	21,687	21,409	18,015	28,757*	36,569*	42,942	
Tot.	469,804	375,980	348,986	332,000	400,719*	453,223*	495,282*	

* Revised.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption	% to Crude	Stocks*
1926	180,582	164,500	45.9	23,213
1927	189,144	178,471	47.6	24,980
1928	208,516	223,000	50.4	24,785
1929	218,954	226,588	48.4	27,464
1930	157,967	153,497	40.8	22,006
1931	133,351	124,126	33.9	19,257
1932	75,608	77,504	23.4	16,354
1933	99,560	81,602	19.9	20,746
1934	110,010	100,597	22.2	23,079
1935	122,948	112,712	22.7	25,069

Figures on Monthly Basis

	Production	Consumption	% to Crude	Stocks*
1935:				
Jan.	10,465	11,261	23.9	22,291
Feb.	10,072	9,374	23.3	22,989
Mar.	10,549	9,741	22.9	20,637
Apr.	10,315	10,466	23.7[a]	18,716[a]
May	10,223	9,938	24.2[a]	18,541
June	8,590	8,710	24.1[a]	17,932
July	8,421	8,396	23.4[a]	17,810
Aug.	9,557	8,795	22.4	18,272
Sept.	9,041	8,764	23.4	18,260
Oct.	11,926	9,662	22.8	19,640
Nov.	11,482	9,084	21.2	21,478
Dec.	12,307	8,521	19.8	25,069
1936:				
Jan.	11,665	10,039	20.7	26,145
Feb.	10,188	7,366	20.1	28,267
Mar.	10,712	8,767	20.5	29,161
April	11,382	10,333	19.9	22,274
May	11,512	10,396	20.6	22,852
June	11,935	11,548	21.9	22,738
July	12,330	11,816	24.6	22,602
Aug.	12,856	10,993	23.6	23,750
Sept.	.....	.....	...	.....
Oct.	.....	.....	...	.....
Nov.	.....	.....	...	.....
Dec.	.....	.....	...	.....

* Stocks on hand at the end of month or year.
[a] Revised.

U. S. Consumption of Gasoline

(Bureau of Mines Statistics)
(In Thousands of Barrels of 42 Gallons)

	1934*	1935*	1936		1934*	1935*	1936
January	29,489	28,062	32,553	August	39,105	42,836	46,081
February	25,310	26,432	27,401	September	34,669	37,862	
March	30,577	31,997	35,871	October	37,674	41,401	
April	32,736	36,082	38,825	November	34,998	35,956	
May	38,071	39,095	42,007	December	30,581	33,734	
June	36,430	37,890	44,630				
July	37,466	41,209	46,692	Total	407,106	432,556	

* Revised on basis of final annual figures issued by Bureau of Mines.

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,282	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	12,255,118
1927	19,700,003	1931	11,253,800	1935	18,664,356

1936:		1936:		1936:	
January	1,877,448	May	1,959,425	September	1,104,404
February	1,260,590	June	1,876,446	October	.....
March	1,840,723	July	1,716,463	November	.....
April	2,258,296	August	934,595	December	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1934																																
June	..13	13	———	12¾	13½	13¼	13¼	13¾	13⅛	13¾	13¼	13⅛	13⅞	13½	13½	13⅝	———	13⅞	13½	13½	13⅜	13⅜	13⅜	———	13⅞	———	13⅜	14	14⅛	14⅛	———	13⅜
July	..14	14⅜	14⅝	———	14¾	14⅝	14⅝	13¾	14⅛	14¾	14⅝	14⅝	13⅞	14¾	14⅝	14⅝	15⅛	14⅝	14⅝	13¾	13⅞	13⅞	14⅜	14⅝	14⅝	14¼	13⅞	14⅜	14⅛	14⅛	14⅛	14⅜
August	..14⅛	14⅜	15	———	15⅛	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	14⅞	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜
September	..14⅛	———	———	15⅜	15⅛	15⅞	15⅜	15⅜	15⅜	15⅜	15⅛	15⅜	15⅜	15⅜	15⅜	14⅞	15⅜	14⅞	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	14⅞	15⅜	15⅜	15⅜
October	..14½	14⅜	13⅞	14	13⅝	13⅞	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	14	14⅛	13⅜	14	13⅜	13⅜	14⅛	14⅛	13⅜	13⅜	13⅜	13⅜	14	13⅜	13⅜	13⅜
November	..13⅜	13⅜	13	13	13	———	13⅜	13⅜	———	13¼	12⅞	12⅞	13	12⅞	———	———	13	13	12¾	13	12⅝	12⅝	12⅝	12⅝	———	12⅜	12⅜	12⅜	13	13⅜	13	13⅜
December	..13⅛	———	12⅞	13	13⅛	13⅛	13⅛	13⅛	———	12⅝	12⅝	12⅝	12⅝	12⅝	13	———	13	13	12¾	13	12⅝	12⅝	12⅝	12⅝	———	12⅜	12⅜	12⅜	13	13⅜	———	13
1935																																
January	..13	13⅛	13½	13½	13½	———	13¾	13¾	13⅝	13⅝	13⅜	13¼	———	13¼	12⅞	———	14⅞	14⅞	14⅞	———	13⅜	13⅜	14⅜	14⅜	14⅜	14⅜	15⅛	15⅛	15⅛	15⅛	14⅜	14⅜
February	..13¼	13¼	———	13¼	13¼	12⅝	12⅝	13⅛	13⅛	———	13¼	13¼	13⅜	13⅜	13⅜	13⅜	14⅞	14⅞	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜
March	..13¼	13¼	———	12¾	12¾	12⅝	12⅝	12⅞	12	11¾	11¾	11½	12⅛	11¾	11⅞	11¾	12⅜	12⅜	12⅜	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞
April	..11¾	11¾	11¾	11¾	11½	11	11	10⅛	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜	11⅜
May	..11⅛	11⅛	11⅛	11½	12½	12½	11⅞	11⅝	11⅜	11⅜	11⅜	12⅛	12⅛	12⅛	12⅛	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜	12⅜
June	..12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
July	..12⅛	12¼	12¼	12½	12½	12¼	12⅛	12⅛	12⅛	12¼	12⅛	12⅛	12¼	12¼	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
August	..12⅛	12⅛	11⅞	11⅞	12⅛	12⅛	11⅞	12⅛	12	11⅞	11⅞	12⅛	12⅛	12⅛	11⅞	11⅞	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
September	..11⅞	11⅞	11⅞	11⅞	12⅛	12⅛	11⅞	12	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞
October	..11⅝	11⅝	11⅝	12	12⅛	12⅛	11⅞	12⅛	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞	11⅞
November	..11⅝	11⅝	12	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
December	..12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
1936																																
January	..15⅛	———	13⅜	13⅜	13⅜	13⅜	13⅜	13⅛	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜
February	..15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
March	..15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
April	..15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
May	..15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
June	..15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
July	..15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜
Aug.	..15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝
Sept.	..16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜
Oct.	..16⅞	16⅞	16⅞	16⅞	16½	16½	16⅜	16⅜	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1930

	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	15.24	8.34	4.38	3.08	9.32	13.10	14.35
Feb.	15.85	7.70	4.03	2.95	10.45	12.92	15.48
Mar.	15.34	7.71	3.35	3.01	11.01	11.51	15.89
Apr.	14.93	6.43	3.02	3.56	12.10	11.55	15.98
May	14.24	6.49	3.09	4.95	13.26	12.05	15.62
June	12.45	6.35	2.66	6.15	13.51	12.57	15.85
July	11.24	6.37	2.89	8.01	14.60	12.10	16.49
Aug.	9.96	5.38	3.63	7.31	15.47	11.98	16.25
Sept.	8.28	5.08	3.84	7.30	15.36	11.55	
Oct.	8.20	4.87	3.65	7.64	13.96	12.62	
Nov.	9.01	4.65	3.44	8.66	13.04	13.15	
Dec.	9.05	4.64	3.24	8.87	12.98	13.28	
Average for Year	11.98	6.17	3.49	5.96	12.92	12.37	

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	1936 July	1936 Aug.	1936 Sept.	1936 Oct.	Day	1936 July	1936 Aug.	1936 Sept.	1936 Oct.
1	7 5/16	———	7 1/16	7 3/4	17	7 1/16	7 5/16	7 1/16	
2	7 1/16	———	7 1/16	7 3/4	18	———	7 5/16	7 1/16	
3	7 1/16	———	7 1/16	7 1/2	19	———	7 1/2	———	
4	———	7 5/16	7 1/16	———	20	7 1/16	7 5/16	———	
5	———	7 5/16	———	7 1/2	21	7 1/16	7 5/16	7 1/16	
6	7 3/4	7 5/16	———	7 5/8	22	7 1/16	———	7 1/16	
7	7 3/4	7 5/8	7 5/16	7 1/2	23	7 5/8	———	7 1/16	
8	7 3/4	———	7 5/16	7 1/16	24	7 5/8	7 1/2	7 1/16	
9	7 3/4	———	7 5/16	7 7/8	25	———	7 1/2	7 3/4	
10	7 3/4	7 5/16	7 5/16		26	———	7 5/8	———	
11	———	7 5/16	7 5/8		27	7 5/8	7 1/16	———	
12	———	7 1/16	———		28	7 1/16	7 5/8	7 5/8	
13	7 3/4	7 5/8	———		29	7 1/16	———	7 3/4	
14	7 1/16	7 5/8	7 5/16		30	7 1/16	———	7 1/2	
15	7 3/4	———	7 5/8		31	7 1/16	7 5/8	———	
16	7 1/16	———	7 1/16						

Average Monthly Price Per Pound

Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence	Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence
Jan.	2.264	4.429	6.434	6.758	Aug.	3.811	7.401	5.696	7.581
Feb.	2.093	4.920	6.292	7.255	Sept.	3.728	7.409	5.508	7.577
Mar.	2.099	5.136	5.745	7.450	Oct.	3.957	6.806	6.130	
Apr.	2.323	5.712	5.604	7.502	Nov.	4.096	6.294	6.308	
May	2.966	6.207	5.822	7.335	Dec.	4.200	6.295	6.340	
June	3.392	6.245	6.027	7.352	Average for				
July	3.860	7.053	5.801	7.696	Year	3.233	6.159	5.976	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	1936 Aug.	1936 Sept.	1936 Oct.	Date	1936 Aug.	1936 Sept.	1936 Oct.	Date	1936 Aug.	1936 Sept.	1936 Oct.
1	12.89	11.87	12.64	11	12.42	12.55	———	22	11.96	12.23	
2	———	12.05	12.53	12	12.60	12.55	———	23	———	12.24	
3	12.83	11.95	12.45	13	12.59	———		24	11.85	12.24	
4	12.63	12.04	———	14	12.41	12.45		25	11.91	12.27	
5	12.59	11.91	12.48	15	12.36	12.40		26	11.88	12.34	
6	12.65	———	12.37	16	———	12.37		27	11.88	———	
7	12.67	———	12.36	17	12.43	12.38		28	11.78	12.47	
8	12.63	12.54	12.39	18	12.31	12.38		29	11.70	12.55	
9	———	12.50	12.29	19	12.13	12.25		30	———	12.63	
10	12.32	12.50	12.21	20	12.14	———		31	11.76	———	
				21	12.03	12.16					

Average Monthly Price Per Pound

	1933 Cents	1934 Cents	1935 Cents	1936 Cents		1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	6.23	11.25	12.70	11.91	Aug.	9.55	13.40	11.48	12.28
Feb.	6.05	12.28	12 58	11.53	Sept.	9.64	13.00	10.80	12.31
Mar.	6.39	12.30	11.63	11.43	Oct.	9.58	12.48	11.28	
Apr.	7.02	11.80	11.73	11.71	Nov.	10.04	12.53	12.01	
May	8.64	11.44	12.25	11.68	Dec.	10.17	12.76	11.99	
June	9.47	12.20	11.89	12.02	Average for				
July	10.76	12.84	12.26	13.11	Year	8.63	12.36	11.88	

World Stocks of Crude Rubber

(All figures are in long tons)

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1934	ON HAND 1935	ON HAND 1936	AFLOAT 1934	AFLOAT 1935	AFLOAT 1936	ON HAND AND AFLOAT 1934	ON HAND AND AFLOAT 1935	ON HAND AND AFLOAT 1936
Jan.	370,039	349,446	285,054*	45,768	42,066	43,870	415,807	391,512	328,924*
Feb.	358,423	340,264	282,902*	53,063	42,969	46,532	411,486	383,233	329,434*
Mar.	353,078	340,284	276,823*	54,722	44,485	58,935	407,800	384,769	335,758*
Apr.	351,073	337,586	264,228*	56,251	37,651	47,678	407,324	375,237	311,906*
May	350,935	322,558	248,317	57,921	44,375	48,860	408,856	366,933	297,177
June	358,461	324,218	245,886	46,698	55,581	47,228	405,159	379,799	293,114
July	365,072	334,692	234,498	45,869	49,018	60,343	410,941	383,710	294,841
Aug.	363,711	334,106	229,056	40,278	47,724	63,597	403,989	381,830	292,653
Sept.	360,623	331,121		38,831	43,413		399,454	374,534	
Oct.	362,571	322,857		38,247	49,913		400,818	371,770	
Nov.	362,826	308,993		38,625	46,588		401,451	355,581	
Dec.	355,000	303,000		47,644	39,094		402,644	342,094	

(Rubber Manufacturers' Association figures raised to 100%)

* Revised.

Note: Complete figures for 1934 and 1935 were revised by the R.M.A. on May 1, 1936.

STOCKS IN GREAT BRITAIN

(No. of Tons in Wharves and Warehouses, not including Latex)

At end of	London 1934	London 1935	London 1936	Liverpool 1934	Liverpool 1935	Liverpool 1936
January	38,570	81,807	84,791	51,702	66,405	77,188
February	38,752	87,605	79,757	52,730	67,983	77,138
March	40,501	92,664	74,779	53,813	69,218	72,823
April	42,413	94,361	68,932	53,695	70,584	71,388
May	42,190	95,722	61,349	54,007	71,927	69,150
June	45,674	98,077	55,993	54,028	73,131	66,173
July	50,490	99,226	49,575	55,414	74,915	63,715
August	48,953	101,574	45,749	56,246	75,584	62,367
September	56,103	101,198		56,848	76,263	
October	63,079	94,749		57,818	76,400	
November	67,656	90,542		60,106	76,301	
December	72,285	86,551		62,505	77,589	

(Figures from the Rubber Trade Association of London)

STOCKS IN OTHER CENTRES

(Figures from Statistical Bulletin of the Int'l Rubber Regulation Committee)

At end of 1935	Penang and Singapore [1]	Malaya [2]	Ceylon [2]	Holland	Para and Manaos
October	37,597	34,271	3,790	1,440	4,346
November	32,597	34,197	4,393	1,550	4,062
December	28,304	33,899*	4,794	1,553	4,683
At end of 1936					
January	31,195	35,231*	4,504*	1,568	4,496
February	38,421	34,109	4,475	1,532	6,199
March	29,322	31,723	3,866	1,547	4,864
April	32,200	34,090	3,123	1,497	4,873
May	26,687	33,179	3,379*	1,360	4,522
June	28,260	34,166	3,057	1,070	4,502
July	29,443	34,395	3,610		4,696

[1] Dealers' and Port Stocks. [2] Inside Regulated Areas. [3] Dealers' Stocks Only.
* Revised.

RUBBER STOCKS AFLOAT

End of: 1935	Afloat for United States	Afloat for Europe	All Other * Afloat	Total * Afloat
August	47,724	32,800	21,476	102,000
September	43,413	31,090	26,497	101,000
October	49,913	29,000	20,087	99,000
November	46,588	26,250	16,162	89,000
December	39,094	25,200	18,706	83,000
End of 1936:				
January	43,870	20,160	19,970	84,000
February	46,532	18,690	19,778	85,000
March	58,935	16,820	14,245	90,000
April	47,678	17,025	18,297	83,000
May	48,860	18,670	21,470	89,000
June	47,228	20,200	22,572	90,000
July	60,343	20,300	25,357	106,000
August	63,597	18,000	17,403	99,000

* *Total Afloat* is an arbitrary estimate based on 1½ months' shipments as adopted by the Department of Commerce. *All Other Afloat* is determined by subtracting the amount of stocks in transit to the United States and Europe from the estimated total.
P—Preliminary estimate.

TOTAL WORLD STOCKS

(Figures from the Survey of Current Business)

At end of	1931	1932	1933	1934	1935	1936
January	510,296	638,416	634,797	661,948	698,153	600,479*
February	516,123	626,819	626,227	663,308	686,195	599,355*
March	532,080	629,894	638,428	666,382	678,809	574,594*
April	531,832	630,803	629,159	658,796	677,006	558,583
May	528,855	627,474	626,537	689,239	677,569	532,411
June	533,021	595,712	613,055	672,804	671,525	511,931*
July	548,794	589,037	618,258	676,200	679,061	506,873
August	555,931	597,274	617,449	674,702	680,644	
September	561,838	599,986	623,683	694,361	661,509	
October	588,873	609,368	636,597	680,616	655,000	
November	605,684	614,342	642,968	684,408	623,300	
December	628,826	629,898	654,890	705,975	611,987*	
Monthly Average	553,513	615,752	630,171	677,395	666,729*	

* Revised.

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	77,944	68,726	50,965	48,739	40,085	45,304	47,233	49,362
Shipments	74,296	69,395	53,638	48,151	40,260	44,094	46,687	50,357
Inventory [2]	13,624	11,838	9,003	7,775	7,644	8,888	9,455	8,196

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,922	4,626	4,579	3,222	3,663	3,875	9,684	10,398	8,918
Feb.	4,335	4,383	3,577	3,285	3,287	3,211	10,725	11,530	9,265
Mar.	5,180	4,346	3,638	4,223	4,204	3,856	11,651	11,675	9,087
Apr.	4,470	4,512	4,854	4,438	5,144	4,903	11,981	11,003	9,034
May	4,456	4,175	4,971	5,332	4,067	5,832	11,127	11,131	8,176
June	4,342	3,910	5,610	5,228	4,262	5,792	10,219	10,755	7,833
July	3,353	3,532	5,465	4,157	5,447	5,744	9,437	8,850	7,746
Aug.	3,533	3,993		4,308	4,739		8,697	7,805	
Sept.	2,936	3,787		3,183	3,303		8,419	8,288	
Oct.	3,287	4,051		3,010	4,095		8,657	8,291	
Nov.	3,341	3,997		3,191	3,990		8,779	8,249	
Dec.	3,778	4,051		3,109	4,154		9,455	8,196	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	80,180	68,829	52,420	48,333	36,891	42,546	46,228	47,879
Shipments	77,127	70,592	54,938	50,021	37,911	41,391	45,046	48,241
Inventory [2]	16,117	12,807	9,999	7,922	6,749	7,815	9,180	8,231

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,530	4,259	4,734	3,199	3,722	4,297	8,403	9,621	8,889
Feb.	4,077	4,171	3,666	3,323	3,362	3,552	8,445	10,466	8,968
Mar.	5,194	4,123	3,904	4,118	4,168	3,913	10,244	10,406	8,960
Apr.	4,735	4,259	4,973	4,342	4,453	4,893	10,585	10,170	9,060
May	4,359	3,892	4,968	4,902	3,451	5,071	10,043	10,615	8,989
June	4,097	3,480	5,190	5,309	4,024	5,674	8,795	10,050	8,355
July	3,531	3,251	5,338	4,323	5,269	5,936	8,053	8,005	7,964
Aug.	3,680	3,894		4,198	4,556		7,555	6,939	
Sept.	3,110	4,125		3,024	3,426		7,639	7,565	
Oct.	3,219	4,435		2,689	4,110*		8,151	8,053	
Nov.	3,169	3,942		2,767	3,801*		8,503	8,161	
Dec.	3,503	4,048		2,850	4,084*		9,180	8,231	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.
(2) Held by manufacturers at end of period indicated.
(*) Revised.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,12*
1934*	2,753,111	2,177,919	575,192	116,852	92,647	24,205	2,869,963
1935	4,009,496	3,285,836	723,660	172,995	139,742	33,253	4,182,491
1935 [1]							
Aug.	239,994	182,389	57,605	7,692	5,524	2,168	247,686
Sept.	89,804	57,285	32,519	5,323	3,819	1,504	95,127
Oct.	275,024	214,609	60,415	8,313	7,128	1,185	283,337
Nov.	398,039	338,425	59,614	13,496	12,042	1,454	411,535
Dec.	407,804	344,613	63,191	13,775	11,370	2,405	421,579
1936							
Jan.*	364,004	298,274	65,730	13,302	11,261	2,041	377,306
Feb.*	287,606	224,816	62,790	13,268	10,853	2,415	300,874
March*	420,971	343,523	77,448	17,974	14,488	3,486	438,945
April	502,775	417,133	85,642	24,951	20,247	4,704	527,726
May	460,565	385,507	75,058	20,006	16,389	3,617	480,571
June*	452,955	375,894	77,061	16,400	13,126	3,274	469,355
July	440,999	372,402	68,597	10,475	8,192	2,283	451,474
August	271,291	209,754	61,537	4,660	3,051	1,609	275,951

* Revised.
[1] Figures for the complete period of 1935 were revised by the Bureau of the Census, Department of Commerce, on January 24, 1936.

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA [1]							DUTCH EAST INDIES [5]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [3]	Siam [4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [3]	Amazon Valley	All Other [6]	World Total [7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	37,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,294	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1933	573,412	167,377	406,035	63,351	4,527	10,874	7,555	7,765	73,851	91,861	149,659	18,394	9,883	2,737	846,312
1934	677,361	211,803	465,558	79,746	10,492	17,233	11,103	17,545	87,400	112,058	175,470	20,170	8,903	2,985	1,008,663
1935	590,522	176,705	413,817	53,584	13,134	20,850	8,868	28,051	57,479	78,362	135,247	29,949	11,125	5,055	856,245
1934:															
Aug.	52,641	17,865	34,776	4,948	552	1,714	1,048	1,908	5,340	8,901	11,356	1,610	710	251	73,114
Sept.	61,051	17,889	43,162	6,555	294	1,438	839	1,626	5,722	10,738	14,688	1,665	764	222	87,713
Oct.	47,045	10,226	36,819	6,544	413	1,412	1,196	1,328	5,970	6,643	5,556	1,413	840	401	68,535
Nov.	51,140	8,759	42,381	6,756	501	953	941	1,356	7,621	7,123	5,338	2,356	1,017	334	76,676
Dec.	59,575	15,375	44,200	8,481	990	1,237	680	2,043	10,865	12,953	12,354	2,956	1,035	239	98,033
1935															
Jan.	56,720	17,142	39,578	5,202	2,269	1,630	1,222	2,614	3,812	5,371	8,704	2,650	1,196	460	74,719
Feb.	50,593	17,676	32,917	5,556	731	1,887	760	2,288	4,395	7,663	15,194	2,076	636	254	74,154
Mar.	47,407	13,437	33,970	3,181	701	1,901	773	2,076	5,592	7,950	7,973	1,472	740	526	66,855
Apr.	53,360	16,029	37,331	2,976	370	1,895	846	1,661	5,574	6,873	12,683	2,827	963	185	74,957
May	51,353	23,720	27,633	4,223	674	2,323	848	2,752	6,217	7,931	21,058	2,138	832	315	76,920
June	49,751	18,637	31,114	3,525	1,077	2,031	603	2,869	5,698	8,258	14,168	2,021	659	393	72,416
July	48,975	11,257	37,718	4,106	580	1,870	1,164	1,939	5,899	5,664	8,373	2,015	427	407	70,162
Aug.	51,873	10,978	40,895	5,683	724	759	566	2,062	4,661	6,923	8,875	2,451	1,150	442	74,541
Sept.	51,247	10,418	40,829	3,970	681	1,797	421	2,278	4,089	5,862	9,422	2,248	1,017	493	73,107
Oct.	48,258	19,364	28,894	5,932	1,198	2,168	1,040	2,622	3,937	6,698	16,432	2,748	1,240	462	73,371
Nov.	43,147	10,518	32,629	4,288	1,806	1,356	455	2,155	3,724	3,963	8,511	2,392	936	587	62,802
Dec.	37,838	7,529	30,309	4,942	2,323	1,233	171	2,735	3,881	5,206	3,854	4,911	1,329	531	61,425
1936:															
Jan.	39,101	12,582	26,519	4,131	1,293	2,317	938	1,665	4,315	6,347	9,270	2,449	1,606	613	61,463
Feb.	38,436	18,857	19,579	3,664	1,382	2,111	529	3,663	4,789	6,643	15,479	2,892	1,201	832	62,764
Mar.	46,552	12,026	34,526	4,336	1,324	1,848	342	2,966	4,484	5,052	8,949	2,553	1,264	586	68,230
Apr.	35,999	14,698	21,301	3,172	1,255	2,053	869	1,596	4,895	6,446	12,612	2,417	1,056	693	58,365
May	46,568	12,527	34,041	2,560	1,115	2,354	517	2,293	4,258	6,015	10,743	2,340	956	700	67,892
June	40,049	15,026	25,023	3,780	1,253	1,386	461	3,737	4,577	6,519	14,370	2,733	943	700	65,482
July	53,114	19,038	34,076	3,496	1,379	1,399	1,035	3,734	6,133	8,578	17,653	2,737	1,000*	700*	81,920
Aug.	43,506	13,361	30,145	4,019	809	2,541	656	3,284	4,978	7,353	11,924	3,017	600*	700*	70,026
Sept.	44,110	10,039	34,071	5,390	900*										

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories * Figure is provisional; final figure will be shown when available.

NOTE: THE FIGURES FOR 1933 ARE REVISED AS OF JANUARY 25, 1935 AND REPRESENT FINAL FIGURES

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	772,803
1934	439,172	158,482	49,560	59,330	28,439	69,905	21,398	47,271	9,642	9,115	3,758	12,418	6,900	10,999	926,389
1935	455,758	128,829	51,450	62,899	26,870	57,567	21,880		9,978	7,593	4,068	11,878	8,140	11,245	
1935															
Feb.	45,999	15,609	4,593	3,513	1,558	5,582	4,356	1,810	848	399	477	838	567	1,836	87,985
Mar.	44,772	12,810	4,017	6,353	2,710	4,421	1,582	4,624	1,459	240	331	891	630	741	85,581
Apr.	40,061	11,574	3,306	5,820	1,063	6,635	1,653	3,387	1,150	520	329	1,049	432	789	78,115
May	29,962	12,498	3,828	6,049	3,929	5,429	935	1,937	671	982	272	853	815	774	68,934
June	31,410	10,253	3,210	4,551	1,435	3,373	1,831	3,087	496	1,065	446	780	745	604	66,286
July	47,694	9,454	3,247	4,929	1,319	4,484	1,298	1,823	520	572	157	800	548	185	77,030
Aug.	41,057	14,120	4,508	4,790	2,814	4,453	916	1,227	655	528	413	820	752	673	77,726
Sept.	35,256	11,223	3,740	5,453	1,604	3,590	1,696	1,593	449	806	282	1,030	793	914	68,429
Oct.	35,770	3,184	5,175	6,074	812	4,727	2,500*	4,876	829	539	671	1,000	597	742	67,496
Nov.	25,756	2,942	4,731	6,258	4,389	4,361	2,000*	4,858	783	449	245	1,206	1,044	1,276	60,298
Dec.	38,072	4,779	5,522	4,823	2,567	6,112	2,500*		1,019	1,074	287	1,359	750	1,466	
1936:															
Jan.	33,260	4,573	6,755	5,545	1,759	4,355	1,500*	467	1,260	760	369	736	664	767	62,770
Feb.	33,789	1,271	6,264	5,257	1,900	2,786	1,000*	94	735	799	106	497	1,312	344	56,154
Mar.	33,743	—1,227	4,333	4,569	1,811	5,170	1,000*	4,376	819	1,033	339	754	1,113	410	58,243
Apr.	44,948	2,097	4,250	5,497	1,079	4,929	500*	3,251	919	1,097	238	848	679	603	71,935
May	35,549	302	4,335	4,639	2,221	5,531	1,000*	4,220	1,034	698	103	657	500*	667	61,456
June	35,901	—1,493	4,846	5,698	2,042	4,567	1,500*	2,427	1,635	579	—27	650	500*	323	59,148
July	38,556	—766	4,621	6,837	2,274	5,126	2,000*	1,733	1,363	713	183	1,094	500*	495	64,729
Aug.	41,094	—1,581	4,500*	6,556		4,300*			807		42	1,145			

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.

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